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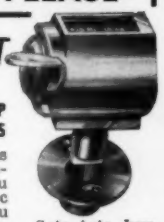

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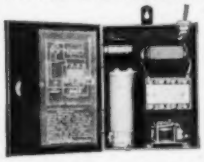

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THE ECONOMIC SIDE

of the World's Existence

By DR. DAVID FRIDAY

***STUDY OF DISTRIBUTION** of international agricultural power production shows United States the leader in economic efficiency. Economic disturbances and depressions are result of many changes. Accumulated changes cause depressions just as long periods of prosperity may cause wars. Modern transportation, communication, war and prosperity discussed. Address given before convention of United States Independent Telephone Association*

"We have worked through this depression; we got through it in 1936," said Dr. DAVID FRIDAY, well known consulting economist of Washington, D. C. "This summer, business was definitely advancing because we had worked out the previous mistakes. You needn't worry for the next three or four years —because you are going to have prosperity. . . . Prosperity on a silver platter with a guarantee."

THE ECONOMIC power of a nation is determined by the volume of its production: First and foremost, of food. And second, of all the other things; those things that we want to live with and to live by; those things the consumption of which constitutes our standard of living.

If a nation is highly productive, then it has a high standard of living and has great economic power. And if it does not produce much, if it has a large part of its labor consumed in feeding itself so that it has not much labor for anything else, it has a low economic power. That is, after all, the fundamental thing about economics.

Considerable light is thrown on the general world situation by an understanding of economics, which is always very important when you enter into a war and all that that involves, as in the present situation. I think if I talk to you about the distribution of international power, it would help you to orient our situation and our position in the world; and it will orient the importance of some of these various countries.

If you ever have to make a comparison between two countries for the purpose of discovering their relative economic power, the first thing you ask about the country that you are investigating is: "What part of your labor power does it take to feed your people?"

That's fundamental. Until you have fed your people, you can't go to any other kind of production at all. If you don't feed them for two weeks, they are all dead. So there you are at the fundamentals, after all, of economics—the scarce thing in the world.

The thing that the world is worried about more than anything in all history is the scarcity of food. The very first supplication of the Lord's Prayer is an economic supplication, not a spiritual one. Remember how it goes?

The first request is: "Give us this day our daily bread." That's the first supplication. It is as old as the Bible; it is as old as mankind—the need for food, the absolute necessity of it. That's the place to begin with economics.

Agricultural Labor Power of Nations Compared

When the nations of the world are examined from the standpoint of what part of their labor power—that is, labor and machinery and land and resources—they use to produce their food, an amazing difference between peoples is found. In the United States, for example, we feed ourselves with what per cent of our labor?

One family out of five—22 families out of 100, to be exact, according to the latest statistics—is on the land. They raise food enough to feed themselves and all the other people in the country; and they raise food enough for export over and above what we eat, to pay for the food that we import—like bananas, coffee, tea, and so on.

And they raise cotton for the people here and in other countries, and that pays for all the textiles—like wool and linen—rubber, and the other things we import. All of that is done by 22 per cent of the people, and the other 78 per cent are left over.

That's where your problem is today; we look upon it as a problem. You would think it is a curse to be so efficient in agriculture.

If you would look at France and ask that same question, you would find that she is almost self-sufficient in agriculture; not quite — she doesn't raise cotton and some other things that we do—but in France they do it fairly well. It takes 40

per cent of her people to feed them—it takes 40 families on the land to feed 100 families. Twenty-two American families produce just as much as 40 families do in France.

Then you get over to Italy. They have 55 or 60 per cent of their people on the land, and they work hard. You can see them out in the spring, eight of them in a row with spades, as your grandfather used to spade the garden. And with 55 or 60 per cent of the people on the land, they can't feed themselves! They have to manufacture and export goods to get food enough to live, and they have to have tourists, and so on.

Germany does it with about 35 per cent of the people, but she doesn't manage to feed herself. She has to export some of her manufactured products, in normal times.

When you get over to Russia—where they have the problems of the world settled and produce for use and not for profit, and all that that you have heard—according to their own figures, they have 80 per cent on the land. Eighty per cent of the people have to stay on the land, trying to grub enough food out of it. And they succeed, too, when they have a good season; and when the weather is bad and they have a drought, they starve—five to seven million at a time in a year.

If I had a blackboard, I would put these figures down:

United States: 22 per cent in agriculture; 78 per cent for other purposes.

Germany: 35 per cent in agriculture; 65 per cent for other purposes.

France: 40 and 60.

Italy: 60 and 40.

Russia: 80 and 20.

We weren't always a country where 20 per cent of the people fed all the people. Oh, no! Back in 1900 it was quite different. In 1900 there were some 30-odd per cent of the people on the land.

If today the same number of families were required to feed a hundred families as in 1900, it would take seven million more workers on the land than there are now—it would take 18 million instead of 11 million. The others we can dispense with now because we have improved the processes of agriculture, in all lines, through research, agricultural colleges, county organizations and such. We have increased the productivity of the farmer just that much.

Where are the other seven million? About a million are making machines that the farmer uses, and twines and gasoline. The other six million are in the automobile industry.

They are the people who dig the copper and the iron out of the ground and make the steel, make the rubber, build the automobiles, build the roads on which they are driven, keep them repaired, get the oil out of the ground, refine it, tend the gasoline stations, tend the garages and repair the cars.

That takes just about six million people, so that there are no more people working today in all the automobile industry and in agriculture than there were in 1900 in agriculture alone.

And we have not only enough food to eat—we beg them to stop producing and pay them to stop—but we have the automobiles and the roads, with just the same labor, and we don't work as many hours a day. That's progress!

Why United States Agriculture Is Highly Efficient

Now it is perfectly obvious from what has been stated that our agriculture is by far the most efficient on the face of the earth. In a country where 22 families can feed 100 families, the work on the land is certainly much more efficient than in another country where it takes 40 or 60 or 80 families to feed a hundred. They all feed the same number of people. We are the most efficient in agriculture.

Why can we do it so efficiently? Because the farmers' work is so efficient—the farmers and the whole agriculture structure, including the Department of Agriculture. The latter is not matched—certainly not surpassed—by any organization in the world as a research organization or as a service organization to the farmers.

And people then say to you: "Well, that's all right, but you don't deserve so much credit for that. You have great resources—greater resources than the others have—you have more land, better land."

But we have the same resources that we had in 1900; obviously we have the same land. We used to think that if you worked the land, you would wear it out. But if you work it well, you improve the land. In Germany the land is much more fertile than it was a hundred years ago, because they work it well. So does France.

And if you go back to the year when I was born—in the middle of the 70's—at that time it took half the people in this country living on the land to feed us, with the same land, the same land exactly. Fifty per cent of the people were living on the land, not 20.

Sometimes I am amazed to see how old the ideas are that we economists know are fallacious, because you know there is some light where we are looking—some places, anyhow, where we are looking, and that's one little advantage.

I can remember when my father brought the first self-binder or reaper home over to Michigan. And I remember that my maternal grandfather, on a night between Christmas and New Year's—this was in 1895 or 1896 when I was visiting him—expounded to us that the cause of depressions was machinery.

It used to take ten men several days to cut and bind the wheat, and now his son went in and bound it all in one day. That was the cause of the depression—anybody, who would open his eyes, could see it, he said.

No—we have done something! If you go back a hundred years, 70 per cent of our people were on the land. We have come from there to here; and coming from there to here, for the fundamental need of the human beings—namely, the need for food—we are doing with 22 families what we used to do with 70.

The rest of them are free—for what? Well, for the telephone industry, for the electric light and power industry, and for the whole automobile industry which has come within four decades, and for the other hundred and one things that we have, that we enjoy and that we associate with modern living.

United States' Food Production and Russia's

Now that's economics, that's economic progress, and I need not go on and elaborate that at tremendous length. But I do want to say to you that in the matter of producing the fundamental need that the human being has for life—namely, food—we are twice as efficient as France and three times as efficient as Italy and four times as efficient as Russia.

By that I mean that it takes two families in France to do what one family does here, or it takes 40 families there to do what 20 do here—namely, to feed 100 families—and 60 in Italy, and 80 in Russia.

Remember, back in 1931 or 1932, people always used to ask you: "What would be the effect if Russia and her five-year plan succeeded?" I always answered that if Russia and her five-year plan succeeded, I thought it would greatly improve the

These men were in Automatic Electric Company's exhibit at the recent national Independent convention when Cameraman Ray Blain entered the room and took their picture, left to right: B. H. PIEPMEIER, vice-president and general manager of Southern Continental Telephone Co., Cookeville, Tenn., in earnest conversation with HUBERT MYERS, engineer of the Kentucky Public Service Commission, Frankfort; KELLY McNISH, general manager of the Ashland (Ky.) Home Telephone Co.; T. C. THOMPSON, vice-president of American Automatic Electric Sales Company, Chicago, and A. D. SHAMBERG, comptroller, York (Pa.) Telephone & Telegraph Co.

business of the United States. They thought they hadn't heard me right, so I always repeated it.

They thought that if Russia managed to produce a little more wheat than she needed—and she was starving to death—she was going to inundate the markets of the world. Now, if you stop to think about it, the only reason Russia wanted to produce wheat for export was so she could import something; and I thought the United States had a better chance of exporting things into Russia than anybody else.

The only point is that up to this point her population has been growing just as rapidly as has her food supply — so don't misjudge the amount of help that Germany is going to get from Russia; that's just incidental. But Russia is nobody to tie up with if you are hungry; and inasmuch as that's what Germany is, it is obvious that Russia isn't going to help Hitler much. Even if it fitted in with her plans, she hasn't the resources.

Russia could be a great country if she had more rainfall, to begin with—that's one of her first shortcomings in the matter of agricultural production—and if her people could be brought to submit themselves to that amount of discipline and follow the rules of production that we know must be followed. She never can be a great country, however, in the sense of living well.

With all this talk that they feed their own people, they can't read or write very much, although they say they can; but they mostly read from the moving pictures, and they can only read what the government is willing to show them in the moving pictures.

Until Russia gets to the point where she can feed her people with half the population on the land, it is obvious that she can not have a high standard of living. And until she can feed her people with a third of the population on the land, she can not have as high a standard of living as Germany has. So remember that. It will keep you straight a lot of the time.

There is one other thing. Not only is there this great difference in the efficiency of agriculture in the United States, as compared with these other nations—that difference resulting in the fact that it takes fewer people to raise our food—but strangely enough, if you take manufactures, you will find that there is just about the same difference in the relative efficiency in manufacturing that there is in agriculture.

All along the line you have it. There are some places where you can't use machinery, places where you can't apply the energy that is in the machinery—the coal, or what not—to the problem. Take merchandising, this business of distribution which always confuses people so. In distribution you will find that it takes twice as many people in Germany as it does here; in France, 2½ times; in Italy, three times as many men; and in Russia, four.

That's the difference between this country and those countries; and that has something to say about our place in the conflict which is going on now. I hope we don't get into the war; certainly we are not inclined to; everybody is against it. Everybody was against it in 1914 and 1915. We re-elected a President in the fall of 1916 in recognition of the fact that he had kept us out of the war; and in the spring of 1917 we went in. If they sink as many ships as they did then, I fear that we may possibly get in.

One thing is certain. As far as the ability to produce wealth and to put it at the disposal over there of whomever we want, by sale or loan, that power we have—and there is no other nation anywhere near us. The United States is first in economic efficiency; then, after a long gap, come England, Germany, France, Italy; then Russia. And in your lifetime or mine, I think the Russians will not see the time when they can manage to feed themselves with half their labor on the land. It is a bitter disappointment.

Reason for United States' Ability to Produce

When people say that all this is merely a matter of American resources and greater abundance, that can't be true, because as I said before, 50 years ago, 75 years ago, we didn't feed ourselves, supply ourselves with food from the labor of 20 per cent of our population, nor did we produce any number of these things that we see on the street now. They were not produced at all. The things that were produced were much more expensive than they are today.

It is that everlasting change—all these changes that we have introduced since 1876 or 1880—that has enabled us to do what we are doing today: to turn out this enormous volume of goods with a very short week of work and a very short day, and to build up this structure that we now have.

Perhaps you want to ask me a question: If this is such a wonderful structure, how do we happen to be in a depression? How do we come to have this depression of the last ten years?

This is not the first depression I have lived through. A book which could have been written along about 1933 or 1934 should have been called "The Generation Unprepared." One of the reasons why we are having so much political dishevelment everywhere in the world—especially here—is that we have a whole generation of people who had never before seen

a major depression. We came out of the depression of the 90's about 1897. By 1898 we were out of it, and from 1898 to 1929 was 31 years. That's a long time. Seldom in the history of modern industry have we had any period which ran 31 years solid without a depression of any magnitude—and we had no depression of importance in that time.

We thought we were going to have one in 1907. I remember well my old professor who said it would be three or four years before we would get out of that depression of 1908, but we rolled out of it in a year. In 1914 we had an incipient one. The war came on. Some people say it was the war that stopped it; I doubt that. Then we had one in 1921. We thought that was going to be the post-war depression.

We all thought, of course, at the end of the war we were going to have this long depression right then and there. Prices had more than doubled during the war, and they thought that the immediate effect would be that prices would fall and we would have a period of unemployment and bad business. We didn't at all.

In 1919 business went up, and also in the first half of 1920. Then we had the depression of the latter part of 1920, 1921 and 1922.

Then we went through the 20's, and we came very near utilizing nearly all of our resources. There were some people too old to work, some too lazy, some not well enough, but by and large, the great mass of our population was producing goods. People said it was fictitious prosperity.

Whenever somebody told me that was fictitious prosperity back there, all I could see was that we produced a large amount of goods and enjoyed them all, in spite of the fact that we loaned foreigners some money to buy the goods which we didn't consume. We were living quite luxuriously in those days. But we produced the goods; we didn't steal any; we didn't make war on anybody and conquer them.

When Expansion of Bank Credit Began

We were expanding credit rapidly, and all that, but that didn't begin in the 20's. There was a great deal of it during the war — everybody knows that. But I'll tell you one you don't know:

In 1897 there was in the United States just five billion dollars of bank credit outstanding; I mean in the national banks and the state banks and the savings banks and the private banks and the trust companies, all together. There were just five billion dollars of bank deposits. Now we had gotten to that point during 108 years of our history—from the time that George Washington was inaugurated the first time up to 1897; and we had built up the bank credit to five billion dollars.

Then, between 1897 and 1914 — just 17 years—we went from five billion of bank credit outstanding deposits, to 18½ billion. You never heard the word "inflation," uttered during those years. Nobody talked about inflation.

I am not defending any expansion of bank credit; I am just warning you not to discover the largest expansion now, because we moved from five billion to 18½ billion from 1897 to 1914; and that was the greatest period of technological advance, probably, that the United States has ever had.

In 1914 the war broke out in Europe, and from 1914 to 1920 we went to 37 billion—exactly double. Then we went from there to 35 billion in 1929, and right after the

(Please turn to page 26)

The Operators' Corner

By MAYME WORKMAN

Traffic Supervisor, The Illinois Telephone Association, Springfield.

FOLLOW-UP work on long distance telephone calls is important. Series No. 382

THE FOLLOW-UP work on long distance calls is important from the telephone company as well as from the customer's standpoint. Therefore, a schedule of subsequent attempts is provided as a guide in making future attempts to complete long distance calls. For example, if the called station does not answer, a time is suggested for making the next attempt on the call and the operator suggests this subsequent attempt time to the customer. If this suggested time is agreeable it is entered, encircled, on the back of the ticket, and the call is tried at that time.

There are some cases, however, in which no definite subsequent attempt is prescribed as, for example, when the called party may be available later but no time of day or definite interval is mentioned (U today, UX, etc.). In this case the operator should try to secure from the calling party a time when he would like to have his call tried saying, for example, "What time shall I try the call?" If he specifies a time, "ag (time specified)," is entered, encircled, on the back of the ticket as the subsequent attempt time.

In some instances the calling party fails to specify a time, or he may hang up without an answer to the query "What time shall I try the call?" In this case the operator should use her best judgment as to when to make the next attempt, except that after 10:00 p.m. the supervisor should be consulted and her agreement secured before making any subsequent attempt time entry.

If the calling party has not specified a time, the operator should use as a subsequent attempt time the earliest time she considers favorable. For example, add one hour to the time the report was received following reports of U today, UD, NRG, CF, or RM tel da CF, or use 2:00 p.m. following a report of U afternoon received during the morning hours, 7:00 p.m. following a report of U evening received during the day hours, or 9:00 a.m. following a report of U (or UD) tomorrow (or given day) or UX.

Questions from Illinois Operators

1. What "ag" time should operator use after customer advises her to leave word and hangs up on receipt of "UX" report?
2. Can you charge a report charge on a collect call when the party answering says, "There's no one here to accept the charge?"
3. On a built-up circuit, if you encounter an NC condition and leave a call order, at the end of five minutes you have received no report and you ask the intermediate operator to ag, how does she answer the flashing signal?
4. Is it necessary for a tributary to make a ticket on a messenger call? Who does the timing?
5. When can you hold the circuit for an NC report?

The answers to these traffic questions are given on page 24.

Mathematics

For Telephone Engineers

By H. H. HARRISON

ARTICLE NINE, SECTION II, concludes the descriptive analysis of harmonics as determined by vibration; the preceding section appeared in the September 30 issue. This is the concluding instalment in the series on mathematics

THE FOURIER equation contains sine and cosine terms but certain types of periodic curve contain only sine terms and other types only cosine terms. These cases can be detected by inspection of the original curve. Referring to Fig. 239(a), if the curve is of the type in which the ordinate y at abcissa x is repeated at —x with, however, its sign reversed, then there are no cosine terms.

If the symmetry at the Y axis is of the type Fig. 239(b), in which the ordinate y at abcissa x is repeated at —x but without reversal of sign, then the curve consists wholly of cosine terms. The reason for this is readily seen when it is remembered that at $\theta = 0$. sin $\theta = 0$ while cosine $\theta = 1$. Hence with $y=0$ at $x=0$, there cannot possibly be any cosine component, while if y has some value at x = O, this must be due to cosine components.

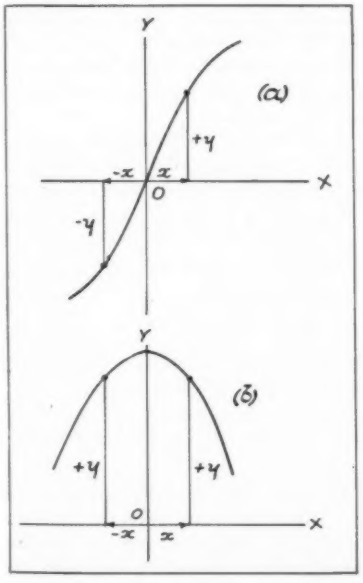


Fig. 239. Method of ascertaining by inspection if a curve contains sine or cosine curves.

The method by which any number of harmonics can be obtained from a periodic curve by superposition will be clear from the following example:

Let

$y_1 = A_1 \sin(\theta+\varnothing_1) + A_2 \sin 2(\theta+\varnothing_2) + A_3 \sin 3(\theta+\varnothing_3) + A_4 \sin 4(\theta+\varnothing_4)$ ..... $+ A_n \sin n(\theta+\varnothing_n)$ . . . (A)

The equivalent of the graphical process of dividing the curve into two portions and adding these is to add to equation (A)

$y_2 = A_1 \sin(\theta+\pi+\varnothing_1) + A_2 \sin(2\theta + 2\pi + \varnothing_2) + A_3 \sin(3\theta + 3\pi + \varnothing_3) + A_4 \sin(4\theta + 4\pi + \varnothing_4)$ . . . (B)

Note: $\sin(n\varnothing + n\pi + \varnothing_n) = -\sin(n\theta + \varnothing_n)$ when n is odd and $\sin(n\theta + \varnothing_n)$ when n is even.

Now $y_3 = y_2 + y_1$

$= 2 \sin A_2 (2\theta + \varnothing_2) + 2 \sin A_4 (4\theta + \varnothing_4)$ . . . . . (C)

Dividing equation (C) into two portions, superposing and adding,

$y_3 = 2A_2 \sin[2(\theta + \pi/2) + \varnothing_2] + 2A_4 \sin[4(\theta+\pi/2) + \varnothing_4]$

$= -2A_2 \sin(2\theta+\varnothing_2) + 2A_4 \sin(4\theta+\varnothing_4)$

Note: $2\times(\pi/2) = \pi$, an odd multiple of π, while $(4\pi/2) = 2\pi$, an even multiple of π.

$y_4 = C+D = 4A_4 \sin(4\theta + \varnothing_4)$ and $A_4 = 1/4$ of the maximum ordinate of this curve.

Subtracting $y_4/4$ from $y_3/2$ will give the value of $A_2 \sin(2\theta+\varnothing_2)$ from which A_2 is obtained.

Dividing the curve into three portions, 0 to $2\pi/3$, $2\pi/3$, to $4\pi/3$ and $4\pi/3$ to 2π, then,

$A_1 \sin(\theta+\varnothing_1) + A_1 \sin(\theta+"\pi/3 + \varnothing_1) + A_1 \sin(\theta+4\pi/3 + \varnothing_1) = 0$

$A_2 \sin(2\theta+\varnothing_2) + A_2 \sin(2\theta+2\pi/3 +\varnothing_2) + A_2 \sin(2\theta+4\pi/3+\varnothing_2) = 0$

$A_4 \sin(4\theta+\varnothing_4) + A_4 \sin(4\theta+2\pi/3 +\varnothing_4) + A_4 \sin(4\theta+4\pi/3+\varnothing_4) = 0$

But

$A_3 \sin(3\theta + \varnothing_3) + A_3 \sin(3\theta + 2\pi + \varnothing_3) + A_3 \sin(3\theta + 4\pi + \varnothing_3) = 3A_3 \sin(3\theta + \varnothing_3)$; and A_3 is equal to 1/3 of the maximum ordinate of this curve.

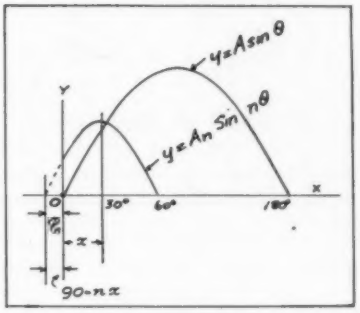


Fig. 240. Method of calculating initial angle of a component.

To obtain $A_1 \sin(\theta+\varnothing_1)$, subtract $(1/3)A_3$ from the original curve. All this work can be done by the arithmetical method previously dealt with.

It must be remembered that when the original curve is divided into n portions which are superposed and added, the resultant curve not only contains the component, $A_n \sin n\theta$, but may contain harmonics which are of the form $A_{nN} \sin Nn\,\theta$, where N is any integer. The presence of these harmonics will be revealed by ripples in the curve $A_n \sin n\theta$.

It is necessary to be able to determine the values of the various angles $\varnothing$. Referring to Fig. 240, $\varnothing_n$ is evidently 90 — x degrees where x is the θ coordinate of the maximum ordinate of the curve $A_n \sin n\theta$. The scale of x in degrees is (1/n) of the scale of degrees for the harmonic curve and, therefore, $\varnothing_n = 90 - nx$ degrees.

It would be possible to have another scale on the diagram which would save calculation but this would involve a separate scale for each harmonic and the method described is quite simple and quickly carried out.

Method of Harmonic Analysis

In an analytical method of harmonic analysis, Fourier's expansion is written

$y = A_0 + A_1 \sin(\theta+\varnothing_1) + A_2 \sin(2\theta + \varnothing_2) + A_3 \sin(3\theta + \varnothing_3) + \ldots\ldots$ (A)

It may be written:

$y = A_0 + A_1 \sin\theta + A_2 \sin 2\theta + \ldots B_1 \cos\theta + B_2 \cos 2\theta + \ldots\ldots$ (B)

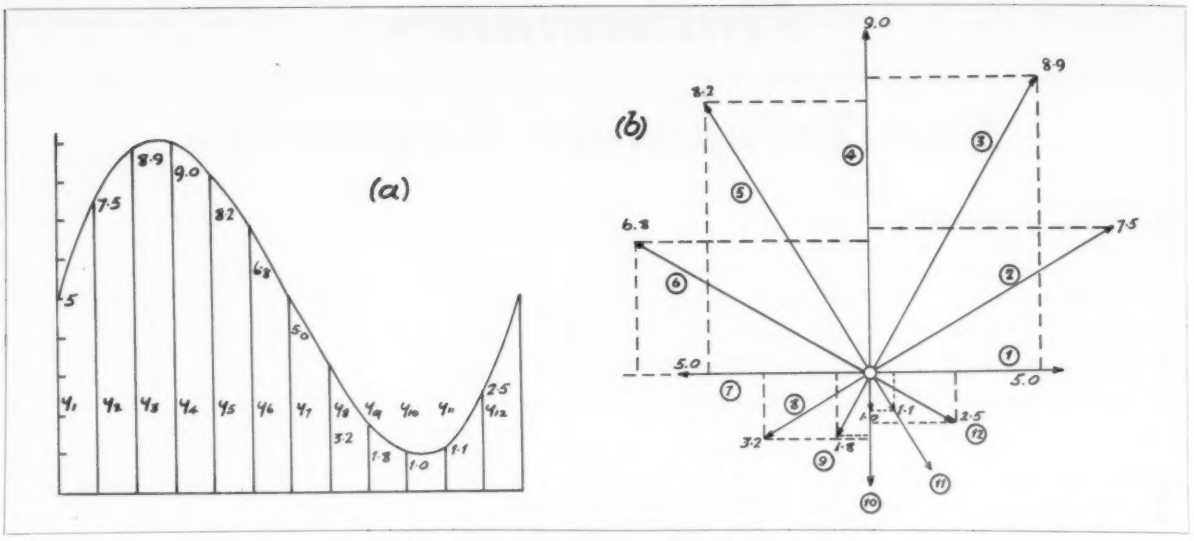


Fig. 241. Combined graphical and arithmetical analysis of a curve.

This is an equivalent statement, since

$A_1 \sin\theta + B_1 \cos\theta = A \sin(\theta+\varnothing)$

where $A = \sqrt{A^2+B^2}$ and $\varnothing = \tan^{-1} B/A$.

By expressing Fourier's theorem in the form (B) all the sine terms are made to pass through zero simultaneously and all the cosine terms through their maximum values simultaneously (when $\theta = 0$, $\sin n\theta = 0$ and $\cos n\theta = 1$).

If the curve is symmetrical about the OX axis there will be no average term; and if the curve is symmetrical about the OY axis, it has been shown that there will be no cosine terms if $y = -y$ when $x = -x$, and that there will be no sine terms if $y = y$ when $x = -x$.

Referring to equation (B), the mean value of the terms on the right hand between the limits of 0 and 2π is 0 with the exception of A_0 which is the average value of y. It is obtained by adding all the ordinates together and dividing by their number.

To get the value of A_1, multiply both sides of B by $\sin\theta$. Thus,

$y \sin\theta = A_0 \sin\theta + A_1 \sin^2\theta + A_2 \sin\theta . \sin 2\theta + B_1 \cos\theta . \sin\theta + B_2 \cos 2\theta . \sin\theta + \ldots$

Between the limits of 0 and 2π the mean value of all the terms on the right hand side is zero except $A_1\sin^2\theta$, the mean value of which is $(1/2)A_1$.

Therefore, A_1 = twice the mean value of $y.\sin\theta$.

A_2 will be obtained by multiplying throughout by $\sin 2\theta$ and will be found to be twice the mean value of $y \sin 2\theta$.

Generally,

A_n = twice the mean value of $y \sin n\theta$

and,

B_n = twice the mean value of $y \cos n\theta$.

By the use of a simple graphical method and with the knowledge of the previous statements relative to A_n and B_n a complex curve can be readily resolved into its harmonic components, or it can be examined for the presence of a suspected harmonic without the necessity for a complete analysis.

Referring to Fig. 241(a) the curve has had a constant term added to it so that all ordinates are positive. This is not essential to the method but it avoids complications brought in by changes of sign.

Radial lines Fig. 241 (b) are drawn at angles θ corresponding to the ordinates of the curve. The lengths of the radial lines represent to a suitable scale the values of their corresponding ordinates and they are marked correspondingly. The vertical projections of these lines give values of $y \sin\theta$, and their sum the total of these products.

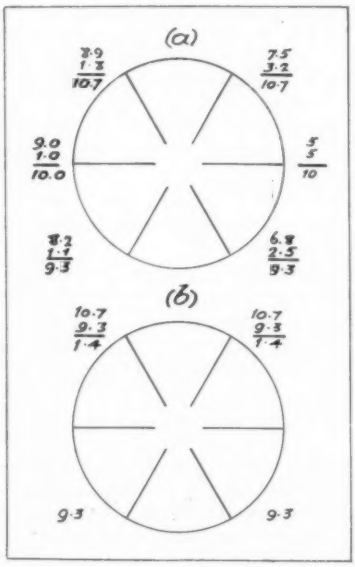


Fig. 242. Auxiliary diagrams of method of Fig. 241.

In the same way the horizontal projections give values of $y \cos\theta$. If, as is the case, 12 ordinates are employed, then $A_1 = (2/12) \Sigma \sin\theta$.

Now it is evident that in the summation the vertical projections above the XOX axis are opposite in sign to those below; consequently, the number of terms in the summation of $y \sin\theta$ can be halved by subtracting from the vectors above XOX the vectors directly opposite to them. Thus vectors (2) and (8) are opposite in sign and their sum is 7.5–3.2 = 4.3. This also applies to (3) and (9), and their sum is 8.9–1.8 = 7.1.

Summing all corresponding pairs,

$A_1 = 2/12\ (4.3 \sin 30 + 7.1 \sin 60 + 8 \sin 90 + 7.1 \sin 60 + 4.3 \sin 30)$

$= 1/6\ (8.6 \sin 30 + 14.2 \sin 60 + 8 \sin 90)$

$= 1/6\ (8.6 \times 0.5 + 14.2 \times .866 + 8)$

$= 1/6\ (24.6)$

$= 4.1$

Proceeding in the same manner with the horizontal projections,

$B_1 = 1/6\ (4.3 \cos 30 + 7.1 \cos 60 + 8 \cos 90 - 7.1 \cos 60 - 4.3 \cos 30)$

$= 0.$

To find A_2 (B_2 will obviously be zero since the curve contains no cosine terms), the angle is now 2θ or 60°. Draw a circle bounding six radii vectors 60° apart, Fig. 242(a). Go round once with the first six ordinates of the original curve, then go round again with the remaining ordinates. Add

the two groups together as shown in the figure.

Now again opposite ordinates may be subtracted and the result is shown in Fig. 242(b).

$A_2 = 1/6\ (1.4 \sin 60 + 1.4 \sin 60)$
$= 1/6\ (2.8 \times .866)$
$= 2.4248/6$
$= 0.404$

To obtain A_3, it is necessary to go round Fig. 243 three times. Taking

Fig. 243. Auxiliary diagram for third harmonic (Fig. 241).

the difference of the totals at ordinates 2 and 4,

$A_2 = 1/6\ (0.6 \sin 90 + 0 \sin 180)$
$= 0.1$

There are no higher harmonics in the original curve the equation to which is

$y = 4.1 \sin \theta + 0.404 \sin 2\theta + 0.1 \sin 3\theta$

It is evident that the cosine terms all vanish.

This method is very rapid since the intermediate diagrams such as Figs. 242 and 243 may be mere hand sketches to aid in the arithmetical processes and to indicate the angles. If more than a third harmonic component is to be found, then the original curve must be divided so as to furnish a greater number of ordinates.

In conclusion, the method will be used to find the components of a complex curve containing both sine and cosine terms. A curve to which a constant term has been added is found to have the following 12 values:

3.1, 5.1, 6.15, 5.11, 3.3, 2.0, 1.3, 1.15, 1.6, 2.6, 2.5, 2.2

Drawing the diagram, Fig. 244(a), and subtracting opposite ordinates then,

$A_1 = 1/6\ (3.95 \sin 30 + 4.55 \sin 60 + 2.51) + 0.8 \sin 60 - 0.2 \sin 30)$
$= 1/6\ (3.75 \sin 30 + 5.35 \sin 60 + 2.51)$
$= 1.51$

$B_1 = 1/6\ (1.8 + 3.95 \cos 30 + 4.55 \cos 60 - 0.8 \cos 60 + 0.2 \cos 30)$
$= 1.21$

Operating with Figs 244 (b) and (c)
$A_2 = 0.577$ and $B_2 = -0.81$
Also,
$A_3 = 0.2$ and $B_3 = -0.325$

The equation to the curve is, therefore:

$y = 3.0 + 1.51 \sin \theta + 0.577 \sin 2\theta + 0.2 \sin 3\theta + 1.21 \cos \theta - 0.81 \cos 2\theta - 0.325 \cos 3\theta$

This curve can be transposed into one containing sine components only. Thus:

$A_1 = 1.51$, $\sqrt{A_1^2 + B_1^2} = 1.93$
$B_1 = 1.21$.
$\tan^{-1} \varnothing_1 = 1.21/1.51 = 0.8$ and
$\varnothing_1 = 38.7°$.

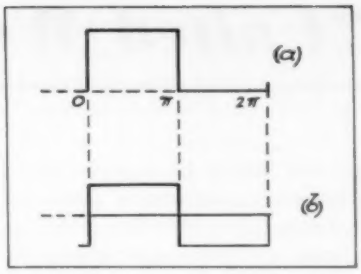


Fig. 246. "Make and break" and "Reversal" curves.

In the same way it will be found that the second term is 0.99 sin (2θ—54.4) and the third is 0.374 sin (3θ—58.5°). The three curves for a half period are plotted in Fig. 245. Fig. 246 (a) represents a make-and-break curve such as would constitute the voltage applied to a calling line when an automatic dial is operated. Fig. 246 (b) is the reversal curve of voltage employed in polar telegraphy.

In both cases the curves repeat themselves in a time represented by 2π. When they are applied to a long line these voltages "shock" excite it; and since such a line has an oscillatory property over a range of frequencies, the Fourier analysis can be applied to calculate the shape of the received current at the far end of the line.

Considering Fig. 246(a), it clearly has an average term since it is not symmetrical about the OX axis.

$$A_0 = \tfrac{1}{2\pi} \int_0^{\pi} C.dx + \int_{\pi}^{2\pi} O.dx$$

$= \frac{1}{2\pi}(C\pi + O) = (\frac{1}{2})C$ where C is the ordinate of the first half period of the curve.

(Concluded on page 34)

Fig. 244. Auxiliary diagrams of complete analysis of a curve.

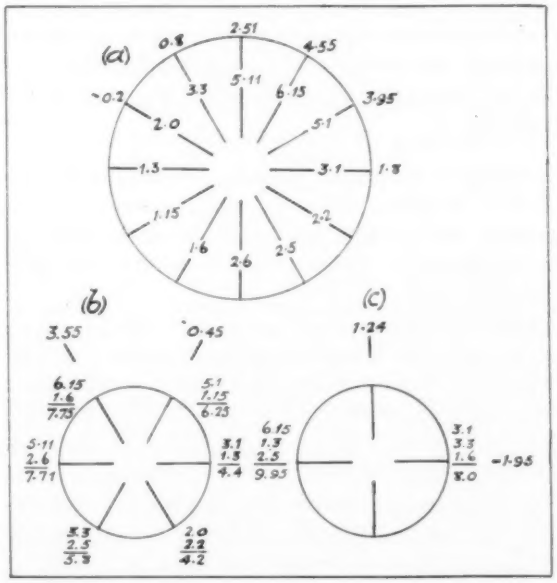
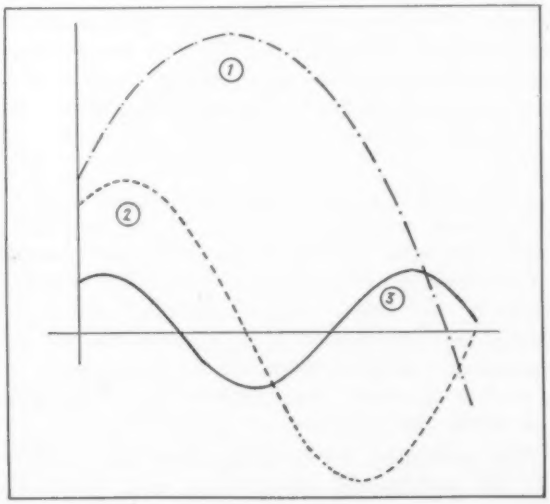


Fig. 245. Components resulting from an analysis of curve of Fig. 244.



"United We Stand . . . . . !"

IF ANYBODY has had the idea that the Independent telephone business is a decadent industry, or that the national and state associations representing the industry are mere paper organizations, he should have been at the Stevens Hotel in Chicago from October 9 to October 13. There he would have seen more than 1,800 people, representing Independent telephone operating and manufacturing companies from all over the United States, engaged for four days in conducting the affairs of the 43rd annual national Independent telephone convention.

This was probably the largest gathering of Independent telephone people ever held. It is significant that each year during the past several years the annual national convention of the United States Independent Telephone Association has been larger. The registered attendance at the meeting of October, 1936, for instance, was 725; for 1937, about 900; for 1938, a total of 1,023; and for 1939, a registration of 1,856.

Surely there can be no suspicion of decadence in a record like this!

THE UNITED STATES Independent Telephone Association is in some ways a peculiar institution. Its permanent staff is small. Its work is carried on to a large extent by Independent telephone men selected from the field; experienced, factual, hard-headed workers interested in the success of the industry. They work in cooperation with the permanent staff of the organization which, with them, operates under the direction of the officers and the board of directors or, between meetings of the board, the executive committee.

These men selected from the field, working usually as members of standing and special committees, receive no pay for their services; they could not, in fact, be hired to do the work they do for the association. They are men of importance in the industry, busy with their own respective every-day jobs. They do this additional association work because they believe in the aims of the association and in the maintenance of a strong and virile group of Independent telephone companies in this country.

It was such a group of men as this—acting as the special wage and hour committee of the association, cooperating with the officers and staff of the association and backed by hundreds of Independent telephone people in the field — who accomplished during the present year the notable feat of obtaining the one amendment (out of numerous amendments asked for by various interests) made to the federal Wage-Hour Law at the first session of the present Congress.

This amendment, by exempting from the rigors of that law switchboard operators at small exchanges, allowed many such small exchanges to remain in business and to continue the employment of thousands of telephone operators.

The work of this committee is typical of the work that has been done and is being done by other special and standing committees of the United States Independent Telephone Association. The standing committees on commercial, plant and traffic are, year after year, splendid examples of active bodies of sincere and hard-working Independent telephone men, experienced in their respective fields, who give unstintingly of their time and effort for the general good of the industry. Their accomplishments have been many and valuable.

Special committees appointed from time to time on matters of current importance—such as toll compensation, insurance, depreciation and so on—invariably make records of activities and accomplishments that justify their existence and benefit the Independent industry. The devotion to their committee duties by the men appointed to this work is something to make every member of the association proud that so many men of this type are a part of the Independent industry.

In all this work the various state telephone associations have worked unitedly and harmoniously with the national organization. Their executive officers are kept fully informed of national conditions relating to the industry and quickly respond to calls for information and assistance. The relations between the national and state associations were never better.

The secretaries of these associations have been particularly helpful in every way in getting information quickly to their member companies and likewise in securing information from them. Through their efficient cooperation the strength of the state associations and their respective members has been quickly available to the national organization whenever it was required.

THERE ARE always problems of pressing and current importance facing the industry. Always, however, when such problems arise, the association and its indefatigable workers meet them and deal effectively with them.

Many questions will yet arise, for instance, in connection with the Wage-Hour Law: questions of interpretation of the law as amended; questions of working hours, pay for learners, and so on. Most of these will have to be dealt with by conferences with the Wage and Hour Administration in Washington.

The association's wage and hour committee has been continued and, knowing the caliber of the men composing it, the industry can feel assured that matters af-

fecting it in this connection will be dealt with promptly and competently. In fact, this committee has already held an all-day meeting in Chicago since the convention and has formulated its plans for going ahead with the work before it.

A number of recommendations were made to the board of directors during the convention relative to work of the ensuing year. These are to be considered by the executive committee and its careful and considerate analyses of them will determine the course of action by the association. An important year apparently lies ahead of us and the strong national and state organizations should be great factors in preserving the stability of the industry.

The customary standing committees of the United States Independent Telephone Association have been appointed for the coming year, and various special committees will also no doubt be created. The association is proceeding, as usual, "full steam ahead."

The newly-elected president, J. F. O'Connell of Madison, Wis., is a worthy successor in that office to such notable predecessors as the late F. B. MacKinnon, John H. Agee and B. L. Fisher. Mr. O'Connell is an Independent telephone man of broad experience, fully conversant with and sympathetic with the aims of the association and the Independent industry. He possesses —and deservedly so—the support of the people of the industry. We predict for the association, under his guidance, a busy and constructive year.

Louis Pitcher, the executive vice-president of the association, and in effect its manager, has settled well and efficiently into the duties he assumed some two years ago. It can be taken for granted that his work and that of his office will continue to be for the benefit of the industry.

The United States Independent Telephone Association seems to be in that fortunate position where it is not necessary for it or its officers and management to plead, as so many organizations must, for the industry it represents to back it up. The industry is backing it up. The registration of more than 1,800 Independent telephone people in attendance at its recent convention amply proves that.

It is an organization of which the Independent telephone industry can be—and is, we think—justly proud. Without it, the more than 6,000 Independent telephone companies in this country would, to a considerable extent nationally, compose an unrelated group of businesses. With it, those companies and their owners and managements can properly and truthfully say "United We Stand!"

In the Nation's Capital

By Francis X. Welch

Special Washington, D. C., Correspondent for TELEPHONY

THE STORY BEHIND the resignation of Wage-Hour Administrator Elmer F. Andrews indicates that he is one of the martyrs of New Deal intrigue. . . . Forecast made that drastic shake-up of the Wage-Hour division is essential to avoid continuance of disappointing record. . . . FCC moves to promote merger of the two national telegraph companies

NOW IT can be told about the mysterious case of Elmer Andrews who last week left his post as head of the Wage-Hour Administration. Thanks to the only exemption which Congress saw fit to enact in the Wage-Hour Law, the Independent telephone companies are not so vitally concerned with the Wage-Hour Administration as are other industries.

But there are the larger Independents doing an interstate business who are still under the act and even the smaller Independents whose employes, other than exchange operators, may be affected by the law. Again, one never knows when New Deal reformers may think up a new wrinkle along the line of federal labor standards legislation, now that a start has been made with a bureau to handle such matters under authority of an organic law.

Over and above all that, what happened to Mr. Andrews is worthy of consideration as a case study of current bureaucratic technique under the New Deal. The things that happened to Mr. Andrews can still happen in other departments and bureaus. At least, if it does nothing else, *l'affaire* Andrews should explode the myth which is being assiduously cultivated by some Democratic party workers to the effect that Secretary of Labor Perkins is no longer a vital force in Washington and is just being allowed to finish out her term as a compliment to the ladies, and that the Corcoran-Cohen team is "out of the window."

Readers of this department, by this time, should have a pretty good idea of Mr. Andrews himself. He is a quiet, affable, well-meaning man with a record of executive ability. He was always loyal to the power that appointed him and sincere in his efforts to obtain the objective for which the Wage-Hour Law was put on the statute books.

This much about Mr. Andrews is generally agreed on all sides in Washington. But his course has been erratic and contradictory at

times. You may recall one occasion when he reversed himself for no better reason than that the labor lobby in Washington had become irritated over the tactics of the so-called agricultural bloc which wanted to amend the Wage-Hour Law. Even the Independent telephone industry's representatives in Washington felt the effect of Mr. Andrews' occasional vacillation when the latter veered between endorsement of a 500-station exemption for telephone company operators and a much lower level.

But a peep behind the scenes would have revealed much reason for the uncertainty of Mr. Andrews. The seething background was such that, in retrospect, it is remarkable that he was able to preserve as much stability as he did in office. In the final phase of his unhappy experience, the principal complaint by the ultra New Dealers against Andrews seemed to be that he was getting nowhere and that for the last six months the Wage-Hour Administration has been more or less drifting aimlessly.

Now it is true that Andrews was never a fiery crusader. He was the cautious, thorough, unspectacular type of executive who hesitated to rush in and "do something." Unfortunately, this did not prevent some of his own subordinates from rushing in and doing plenty, with the net result that wage and hour policies became so crossed up and short-circuited that the only solution to the entire mess is a shake-up.

Whether the new boss, Lieutenant Colonel Philip Fleming, a reputed "iron man," will be able to bring order out of chaos is questionable. Certainly he won't be able to do much unless he is given much more authority over his own household than Mr. Andrews ever had.

THE REAL trouble goes back to the very beginning of the Wage-Hour Administration. It is no secret that Congress has never been enthusiastic about the way Secretary Perkins has conducted the Labor Department. Indeed, it is one of those seven wonders of political history in Washington that the first lady cabinet member should have been allowed to muddle along this far. By all known rules and precedents of political behavior, she should have been dropped years ago. But that is another story.

And so, when the Wage-Hour Law was going through its stormy passage in Congress, one concession that the administration had to make was that the new division would be an independent bureau, removed as far as possible from the control of the Labor Department clique which has always been tied in very closely with the White House influence of the Corcoran-Cohen team.

Naturally, this situation did not endear the new agency to the heart of the Secretary of Labor. Believe it or not, Madam Perkins is a rather sensitive lady about her official prestige. It is commonly charged that the reason former Assistant Secretary of Labor Edward F. McGrady left the post at which he became so successful was because his superior had become jealous of the overshadowing publicity won by him through his settlement of various labor disputes.

Oddly enough, Secretary Perkins was probably more responsible for Andrews' appointment than anybody else in Washington. Mr. Andrews was a deputy commissioner in the New York State Labor Department when Miss Perkins headed it under Al Smith and Franklin Roosevelt. When she moved down to Washington, Governor Lehman appointed Andrews to succeed her in the New York post, upon Miss Perkins' recommendation. It is also believed that her voice was the deciding factor in his ultimate appointment as head of the Wage-Hour Administration. But official friendships like these have a way of turning into surprisingly bitter vendettas.

PERHAPS the best evidence that the Labor Department was trying to sap the Wage-Hour Administration was the fact that notwithstanding various censuring of Andrews for "leniency" towards business, the department actually used its control over the Wage-Hour budget to scuttle the appropriation, thus making energetic administration impossible.

The fine Italian hand of Tommy Corcoran appeared very early in the affairs of the Wage-Hour Administration and, as might be expected, in the most strategic spot—the general counsel's office. You must keep in mind that the Wage-Hour Law was not merely a new statute but virtually an unprecedented policy for the federal government. It placed a terrific amount of responsibility upon the first captain on the bridge of the vessel thus launched by Congress into unchartered administrative seas.

That captain was supposed to be Andrews; but by the time he paid his first visit to the wheelhouse, he found that his first mate had gone ahead and laid a course in considerable detail. The first mate was Calvert E. Magruder, Harvard classmate of Tommy Corcoran, whom the latter succeeded in having named head of the Wage-Hour Administration's legal division. (Magruder has since been appointed to the federal judiciary.)

During Magruder's tenure, practically all of the basic interpretations of the law were formulated, including the one to the effect that telephone companies are not "service establishments" within the meaning of statutory exemptions, as contended by the United States Independent Telephone Association based on extensive briefs of competent legal counsel.

As evidenced by this interpretation, many of Magruder's so-called advisory rulings were regarded by business men as onerous and farfetched. For example, there was his Interpretative Bulletin No. 13 which construed section 15 of the Wage-Hour Law to the effect that any time spent by employes in attending lectures, or even banquets or other social gatherings sponsored by an employer, was time worked and, therefore, to be paid for.

In his effort to be loyal, or at any rate cooperative, Andrews made no protest (publicly at least) against this high-handed conduct of the first mate. Instead he suffered the embarrassment and shouldered the criticism from conservative quarters which resulted.

Now, it takes a pretty big personality to make a success of putting an important new agency, such as the Wage-Hour Administration, on its feet. The New Deal has had the advantage of at least one such character in the person of Joe Kennedy, who set up the first Securities and Exchange Commission and then the U. S. Maritime Commission, and then went on overseas to put over the complicated reciprocal trade agreement with Great Britain.

Admittedly, Andrews is no Kennedy; but whatever chance he might have had of making a shining success of the federal government's first bold adventure into the field of regulating labor standards of American business, was just about torpedoed under the hamstrung conditions which prevailed when he took over the job.

However, Andrews worked cheerfully through the first six months of his tenure. Even when Congress on the last day of the regular session cut his appropriation to $1,200,000 (half as large as he claimed would

be necessary), he went ahead with a will to whip his bureau into real fighting trim. He divided the country into 14 districts and prepared to start an enforcement drive. But here came the final chapter.

IN A RATHER belated fit of righteousness, Congress had sewn up the entire Wage-Hour Administration under strict Civil Service regulation. Andrews wanted it otherwise. He felt that, in jobs requiring discretion and judgment affecting the fortunes of millions of employes and billions of investment, it was necessary for him to have aides with intangible qualities of personality that would count more than the conventional rules (and preferences) of the Civil Service Commission.

However, there was nothing to be done about the Civil Service restriction once it was in the law. As a result Andrews found that only his 14 district chiefs were partially exempt from Civil Service; they could be hired by taking a "qualifying" test. He counted eventually on this to bring in a coterie of strong men for these key positions, who would "carry the organization on their shoulders."

But the Democratic patronage forces had also discovered that instead of a new wide-open bureau full of patronage plums, only 14 posts remained open. Then started the scramble at the pie counter.

When Administrator Andrews started out to name his district managers, he found that in almost every instance somebody had gotten there ahead of him. (Incidentally, the Labor Department seemed to be one of the favorite channels for approaching these jobs.) Instead of "strong men" at the key posts, he found himself loaded down with lame-duck Congressmen.

Let us look over the field. There is the important Pennsylvania-New York-Delaware district to which an ex-Democratic Congressman from Philadelphia, Frank Dorsey, was named. In the equally important New York-Connecticut district Andrews was handed ex-Representative George B. Kelly, another Democratic lame-duck who hails from Rochester, N. Y.

In the Middle West the strategic Illinois-Wisconsin district went to another lame-duck Congressman from Milwaukee, Thomas J. O'Malley, who—rumor has it—even had trouble passing his non-competitive "qualifying" examination. In another Middle West district, a former Democratic Ohio Secretary of State, William J. Kennedy, was taken care of.

The New England managership went to a good friend of Secretary Perkins, Thomas Eliot, who failed to make the grade when he ran for Congressman in Boston last year.

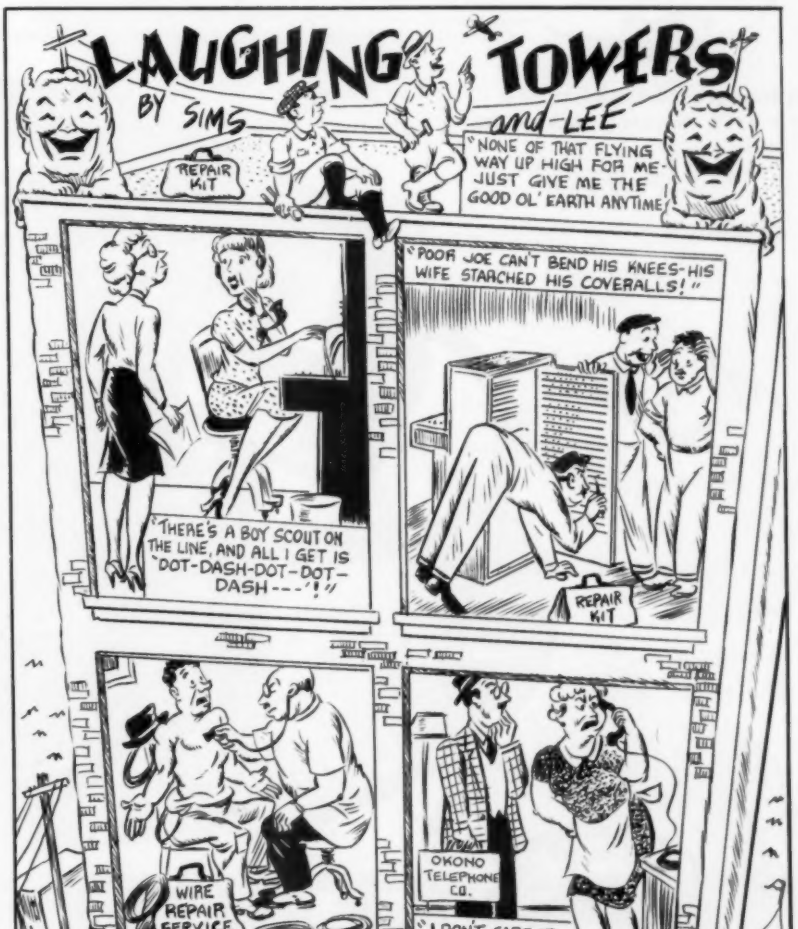
Of course, some of these lame ducks may turn out to be able enough executives in their own right, particularly the Rochester, N. Y., entry, an Italian-speaking Irishman, who has already shown considerable promise in administrative fields. The new district chief for San Francisco, Wesley O. Ash, is a government career man who should pull his own weight pretty well on the West coast.

But the point is this: After being hamstrung at the outset by radical New Deal legalists and undercut by his own superior, Andrews was expected to carry a load of dead weight and still make a go of Wage-Hour administration. The consensus of opinion in Washington is that he was taken for a ride. He is one of the minor martyrs of New Deal intrigue. He will probably be a good sport and keep quiet about it. He does not seem likely to imitate the breast-beating General Johnson or tattling Raymond Moley, even if his position commanded a comparable audience.

Perhaps the new man, Lieutenant Colonel Fleming, with characteristic military forthrightness, will insist on a stronger hand in dealing with the situation. Col. Fleming's past record of actual accomplishment, both as an administrator and as an engineer, would indicate a temperament that would make just such a demand.

Yet you can depend on the Labor Department to hold back and resist any drastic shake-up. Nevertheless,

(Please turn to page 33)


LAUGHING TOWERS
BY SIMS and LEE
REPAIR KIT
"NONE OF THAT FLYING WAY UP HIGH FOR ME-JUST GIVE ME THE GOOD OL' EARTH ANYTIME!"
"THERE'S A BOY SCOUT ON THE LINE, AND ALL I GET IS 'DOT-DASH-DOT-DOT-DASH---'!"
"POOR JOE CAN'T BEND HIS KNEES-HIS WIFE STARCHED HIS COVERALLS!"
REPAIR KIT
WIRE REPAIR SERVICE
"I DON'T KNOW WHAT'S WRONG WITH ME, DOC-ALL I SEE IS LINES BEFORE MY EYES!"
OKONO TELEPHONE CO.
"I DON'T CARE IF YOU ARE HIS BOSS-HENRY'S NOT GOING TO THE OFFICE TODAY-HE'S GOT TO HELP ME CLEAN!"

BIN

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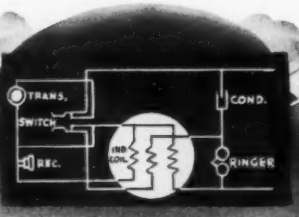
1ST MODERN STYLE HANDSET WALL TELEPHONE

1ST INTRODUCED COMMERCIALLY A MODERN TYPE HANDSET TELEPHONE



1ST THREE-WINDING INDUCTION COIL TELEPHONE CIRCUIT REDUCING SIDE-TONE

1ST INTRODUCED COMMERCIALLY A SELF-CONTAINED MODERN HANDSET DESK TELEPHONE

1ST NON-SKID BASE

1ST COMMERCIAL ANTI-SIDETONE TELEPHONE SET FOR USE WITH OLD RINGER BOXES

1ST TO USE MOLDED PLASTIC BASE

THE TYPE 40 MONOPHONE

BIND TODAY'S MONOPHONE...
TRY OF "*Firsts*"

FIRST — with a modern handset telephone; FIRST — with an effective anti-sidetone circuit; FIRST—with a molded plastic one-piece base; FIRST—with a modern style handset wall telephone; FIRST—with a host of modern developments, a few of which are pictured on this page.

Here in this striking history of firsts, is a fitting background for the brilliant new instruments recently added to the Monophone line — the Type 40 self-contained desk Monophone and the Type 50 wall mounting Monophone. Both of these models base their superlative performance and stamina on proved fundamentals of previous Monophone design and origination—principles which have established the Monophone as the outstanding telephone creation of the industry.

Operating companies standardizing on Monophones invariably find themselves leading the field in the beauty, performance and long life of their telephones—qualities which are stimulating both to new business and to yearly profits. Let us send you information on the complete Monophone line — a request will bring it by return mail.

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General Telephone System

Acquires Santa Barbara, Calif., Properties

CONTINUING to expand its properties, the General Telephone Corp. of New York, N. Y., on October 2 acquired control of telephone properties serving all of Santa Barbara county, California, according to an announcement made by C. F. Mason, president of Associated Telephone Co., Ltd., and manager of all properties of the General Telephone System located west of the Mississippi.

The 15 communities in the territory of the Santa Barbara Telephone Co. are served by nine central offices, seven of which are dial-operated and serve approximately 85 per cent of the total of 18,600 stations. Toll lines in the county also are owned and operated by the company. Total investment in plant and equipment is approximately 3½ million dollars.

The company headquarters building, located at West Canon Perdido and Chapala streets, is one of the most beautiful structures in Santa Barbara, a city noted for its attractive Spanish type homes and business section. Outside walls of the two-story building are finished in terra cotta blocks, and above the Canon Perdido portal are medallions commemorating the discovery and development of California. Richly-ornamented, with its bolt-studded doors and grilles and balconies of wrought iron, the building closely resembles the city hall in Seville, Spain, erected during the golden years of the Spanish renaissance.

Foundations of the fireproof steel and concrete structure are of sufficient strength to support a third floor when additional space becomes necessary to fill the service demands of the increasing population. The interior, carefully-planned both as to color scheme and arrangement of offices, provides a maximum of comfort and convenience to patrons and employes. The Spanish period furniture is comfortable as well as pleasing in appearance, and harmonizes with the tiled floors and paneled walls.

CHARLES F. MASON of Santa Monica, Calif., president of the Santa Barbara Telephone Co., is also head of the Associated Telephone Co., Ltd. He is active in state and national association work, having served as president of the California association since 1934 and as a director of the national organization for the past three years.

Of the approximately 150 employes of the Santa Barbara company, all who could be relieved from duty were guests at a luncheon on October 2 at which the transfer of properties was announced by R. E. Easton, former president of the company. Mr. Mason welcomed them into the Associated company's system and expressed his belief that greater opportunities for advancement for those connected with the company would result from the consolidation.

"I have found, and I believe my assistants will testify," said Mr. Mason, "that as our company has grown, more opportunities for advancement or for transfer to more desirable work have developed.

"With very few exceptions, in the Associated company all of the officers, department heads and supervisors are people who have come from the employes' ranks and have grown with the organization. The larger organization also can generally offer you better facilities for training and for building up valuable experience."

Telephone service in Santa Barbara had its origin in 1882 when the Pacific States Telephone Co. established a central office in a corner drug store and served a total of 12 subscribers. In 1904, the Home Telephone Co. of Santa Barbara was organized, and in 1907 the service was expanded to include the whole of Santa Barbara County.

It was on December 1, 1916, that the present company commenced operations, having acquired the proper-

Main building and headquarters of Santa Barbara Telephone Co., located at West Canon Perdido and Chapala streets in Santa Barbara, Calif. The counterless commercial office (right view) is distinctive with its tiled floor, paneled walls, beamed ceiling and period furniture.

DIRECTORS, OFFICERS AND EXECUTIVES of the Santa Barbara Company. Standing, left to right: HARLAN W. HOLMWOOD, director and secretary-treasurer; ERNEST IRWIN, general agent; ELIOT H. CHEADLE, director and vice-president; A. L. CHICKERING, JR., director; G. E. JONES, director; H. V. BOZELL, vice-president of the General Telephone Corp., New York City; C. F. MASON, director and president; R. E. EASTON, chairman, board of directors; D. A. SATTLER, director and vice-president; F. E. NORRIS, general plant superintendent; GUY T. ELLIS, general auditor; E. W. WATSON, general commercial and traffic superintendent. Seated: E. W. ADLER, plant accountant; W. C. KEEFE, commercial superintendent; A. O'NEILL, auditor; D. D. BEENKEN, superintendent of central office equipment and buildings; W. G. McKENZIE, superintendent of installation; MISS F. A. COURTNEY, chief operator at Santa Barbara; W. H. WHITMARSH, revenue accountant; MISS A. E. PARTNEY, chief operator at Santa Maria; H. L. WILLIAMSON, superintendent of construction; MRS. M. McCABE, chief operator at Lompoc; MRS. F. J. HOGELUND, cashier, and H. L. LAW, JR., commercial superintendent of northern area.

ties previously owned by The Pacific Telephone & Telegraph Co., Home Telephone & Telegraph Co. of Santa Barbara, and Home Telephone & Telegraph Co. of Santa Barbara County.

This acquisition was followed by a period of integration and unification; duplicate plant was removed. Following the disastrous earthquake of 1925, plans were instituted which culminated in the erection of the modern office and equipment building in Santa Barbara in 1928. In rapid succession automatic exchanges were constructed at Goleta, Carpinteria, Montecito and in other parts of the county.

The board of directors of the Santa Barbara company consists of C. F. Mason, Eliot H. Cheadle and Harlan W. Holmwood of Santa Monica. G. E. Jones of Los Angeles, A. L. Chickering, Jr. of San Francisco and R. E. Easton, chairman, and D. A. Sattler of Santa Barbara.

The officers of the company are: C. F. Mason, president; Eliot H. Cheadle and D. A. Sattler, vice-presidents; Harlan W. Holmwood, secretary-treasurer, and Marion Mountain, assistant secretary-assistant treasurer.

The Santa Barbara company will continue to operate as a separate unit, although its operating headquarters have been transferred to Santa Monica, where the Associated Telephone Co., Ltd., has its main offices.

INITIATIVE

The rarest of human qualities is initiative. That, at least, is one man's conviction. All worthwhile men have good thoughts, good ideas and good intentions, but precious few of them ever translate them into action.

How many of us are inspired by what we read, see, or hear; adapt the inspiration to a practical business idea, and then do nothing through lack of initiative.

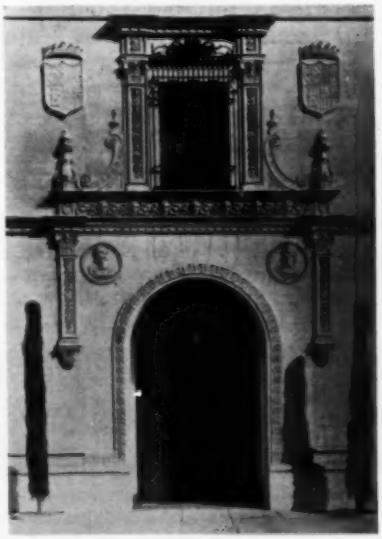
Overcome this in ourselves and in those under our direction, and the greatest tonic possible will have been administered to our business. Let us try some treatment in this direction. — JOHN HANCOCK FIELD.

Michigan Bell Drivers Establish Safety Record

Oscar G. Olander, Michigan state police commissioner, comments on the safe driving record of Michigan Bell Telephone Co. employes in the current issue of "The Michigan Bell," employe magazine.

As of September 1, the company was only a fraction of one per cent out of first place in the competition, with a safe driving rate of 97.31 per cent in the annual safe-driving contest sponsored by the Detroit Industrial Safety Council. Two years ago, when the contest was initiated, telephone drivers won first place. Last year they placed fifth but again were less than one per cent out of first place.

The state police head emphasizes that the same safety habits are found among Michigan Bell employes throughout the state. "They are not only good 'city drivers'," he writes, "but they are exceptionally careful drivers in smaller communities and out in the country.



The telephone entrance on Canon Perdido street in Santa Barbara, Calif., embodies the influence of Old Spain in California architecture.

Commission and Court Activities

Appointed Assistant to Chairman Fly of FCC

The Federal Communications Commission on October 20 announced the appointment of Nathan H. David of Newton Highlands, Mass., as assistant to Chairman James Lawrence Fly. He assumed his new duties on October 23.

Mr. David was born at Somerville, Mass., August 1, 1913. He was graduated from Yale University in 1934 magna cum laude and stood fourth in his class when graduated from Harvard Law School three years later. He served two years on the board of the Harvard Law Review, the second year being spent as case editor.

Since 1937 Mr. David has been associated with the Boston law firm of Burns and Brandon, (John J. Burns was formerly general counsel of the Securities and Exchange Commission).

▼ ▼

Southern California Company Reduces Los Angeles Rates

Rate reductions expected to reduce revenue of the Southern California Telephone Co. from its stations in the Los Angeles metropolitan area approximately $1,600,000 annually were confirmed by the California Railroad Commission on October 13, after being announced by Mayor Fletcher Bowron, Los Angeles, following a conference between the mayor, the local board of public utilities and Commissioner Justus Craemer.

The reduction ends a protracted dispute between the city attorney, backed by certain liberal local politicians, and the Southern California company. The city attorney has been endeavoring to force rate reductions which, officials of the telephone company have stated they intended to make voluntarily as soon as a study undertaken by them in connection with rate experts of the state commission was concluded.

The gauge of the rate reduction is a unit system in which the present 10-cent station toll will be reduced to seven cents; the call cost being measured as twice that of a non-toll three and one-half cents call. Under this system a 15-cent call will be reduced to 10½ cents, a 20-cent call to 14 cents, a 25-cent call to 17½ cents and a 30-cent call to 21 cents. Two-party line subscribers will receive the benefit of the reduction as well as one-party, it was announced.

Rate reductions will begin in December when certain base rate areas in Los Angeles and other exchanges, that have showed marked growth in recent years, will be extended. All single party, residence subscribers will receive the new unit message rate in January.

This will supplant present toll charges between Los Angeles and Alhambra, Beverly Hills, Burbank, Compton, Gardena, Culver City, Glendale, Hawthorne, Inglewood, Montebello, North Hollywood, Pasadena, Downey, Arcadia, Canoga Park, Crescenta, El Monte, Reseda, Van Nuys, Monrovia, San Fernando, Santa Monica, Sierra Madre and West Los Angeles. Single party extended service subscribers living in these areas will also receive the benefit of the reduction.

In February, similar toll charge reductions will be made to all single party lines and commercial PBX subscribers in Los Angeles, and to all business single party, commercial PBX extended service subscribers in the other exchanges.

The last step in the plan will be to expand the extended area and message unit service to include Bell, El Segundo, Torrance, Lomita, San Pedro and other exchanges. Thus, the reduction will eventually apply to all foreign exchanges out of the Los Angeles exchange area where the toll is 35 cents or less and represents approximately a 30 per cent slash in such rates.

Cooperating with the Southern California Telephone Co. in the rate reduction program are the Associated Telephone Co. Ltd., the Whittier Home Telephone & Telegraph Co., Downey Home Telephone & Telegraph Co., the California Water & Telephone Co. and the Sunland Rural Telephone Co.

In commenting upon the rate reductions President N. R. Powley, of the Southern California company, issued the following statement:

"The company, in agreeing to introduce this service, effective after January 1—barring major economic upsets—will incur an overall increased investment of $4,500,000 and will pass on to its customers an annual savings to them of more than $2,000,000. Confronted, as we are, with rising expense levels and increased costs of operation, together with an unknown economic future, due to world wide difficulties, the new proposed service with its attendant increased investment and revenue reductions introduces a major problem to the management of the company."

▼ ▼

Hearings in Oklahoma Bell's Statewide Case

Statewide hearings on applications of the Southwestern Bell Telephone Co. for increase or readjustment of its exchange rates in 144 exchanges opened October 19 before the Oklahoma Corporation Commission. The hearings are likely to continue for several weeks.

Preparatory for the hearings the commission's telephone engineering and accounting departments spent several months making a field survey, inventory and appraisal of the Bell properties in Oklahoma and in compilation and analysis of these records. Experts of the Southwestern Bell company also made an exhaustive study of its properties, expenses and revenues.

The company claims that it is losing money in many of its Oklahoma exchanges, and is not earning sufficient revenues to meet necessary operating

expenses, including increasing taxes and other essential expenses, to maintain fair wages, to keep its equipment in good condition, and to pay a fair overall return on its investment.

At the opening of the hearings the commission denied the application of the company to admit evidence to support a recent request for temporary exchange rate increases in 22 Oklahoma cities and towns, pending outcome of the general hearings for statewide permanent rate adjustments.

The commission ruled that the present hearings will be confined to determining permanent rates applying to the 144 cities and towns involved in the statewide investigation, including the 22, and that no temporary rate increases would be considered at this time. E. W. Clausen, of St. Louis, Mo., general solicitor for the company, took exceptions to the ruling for purposes of appeal.

Through attorneys or other representatives, 20 Oklahoma towns entered protests against any rate increases. Pawhuska sent a protesting delegation to the hearing wearing badges and headed by its woman mayor, Mrs. Helen McCain.

The first witness for the company was J. K. Crosland, of New York City, assistant comptroller, Western Electric Co. His testimony was intended to show that, in furnishing telephone supplies and equipment to the Bell companies at reasonable prices, the Western Electric is performing a necessary and essential service. He testified that for the period from 1916 to 1938, inclusive, the average net profit of the Western Electric, before deducting depreciation, was 4.9 per cent, and was 6.7 per cent after deducting for depreciation.

Figures from 88 other large manufacturing companies, showed for them an average net profit, over a period of 14 years, of 8.2 per cent before deduction of depreciation and of 10.5 per cent after such deduction.

Mr. Crosland also stated that his company charged the Bell companies, including the Southwestern Bell, never more, and usually less, than prices quoted to non-Bell companies.

During the second day of the hearing Mark W. Cummings, of St. Louis, Mo., general statistician for the Southwestern Bell, testified from charts and graphs. These were not offered as exhibits but were taken from records of the company and prepared primarily for information of company officials. These charts analyzed many phases of the company's operations, most of them based on the period from 1929 to 1938, inclusive.

For Oklahoma, according to the witness, 1938 revenues were 6 per cent below 1929. At the same time expenses were 7 per cent above the 1929 level, and plant investment was 35 per cent greater. He also testified that the net return for Oklahoma, expressed in dollars, is less than one-half what it was in 1929. Toll revenues, he said, are 28 per cent below what they were in 1929. Total of all taxes paid by the company in Oklahoma in 1938, was 54 per cent higher than in 1929.

The last company witness before the commission recessed on October 20 until October 23, was W. H. Reilly, of Dallas, Tex., commercial engineer for the company in Texas. He submitted expert testimony as to rate structures of the company, and the various elements of hazard, growth and peculiar local conditions, which must be considered in making rate schedules for each exchange.

He testified that most of the present exchange rates in Oklahoma were made 20 years ago. He stated that cost of local exchange service increases with growth of population of the town in which the exchange is located and asserted that growth in the number of stations in Oklahoma has been 134 per cent since 1919.

▼ ▼

Massachusetts Service Plan Will Reduce Revenues $175,000

A new service plan effected as the result of conferences between officials of the New England Telephone & Telegraph Co. and the Massachusetts Department of Public Utilities will reduce the company's revenues approximately $175,000 yearly. The plan was announced on October 11 and will go into effect November 1.

Commission chairman, Francis L. McKeown said that the plan includes not only actual reduction in telephone charges affecting all sections of the state but that service improvements in metropolitan Boston which will extend the scope of dial service for many subscribers in the dial office area also are provided.

The company's revenues received from measured service customers in metropolitan Boston will be reduced about $115,000 a year, through the substitution of a message unit rate on 10 and 15-cent toll calls within that area and the city of Lynn.

Residence subscribers for whom the message unit rate is three cents will be able under the new plan to make their 10-cent, or two-unit call, to these points for six cents while the rate for business customers will drop from 10

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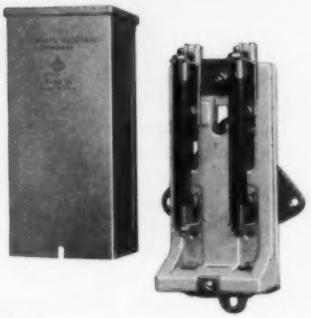

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cents to either seven or eight cents depending on the volume of calls used.

Proportional reductions on present 15-cent calls will reduce the rate for residence subscribers to nine cents and for business customers to 10½ to 12 cents depending on the volume. In each case, such calls will be included in the measured service allowance, so that they may be made without charge to customers who would not otherwise use their full allowance of calls.

▼ ▼

Injunction Granted Against Florida Directory Co.

The Southern Bell Telephone & Telegraph Co. was granted a temporary injunction against the Florida Directory Co., publisher of cross-index directories, in an order filed in federal court in Tampa, Fla., on October 11, by Judge Akerman.

The directory company was enjoined from violating Southern Bell copyrights on "any and all directories," and specifically on the Jacksonville city directory.

The suit, one of several against Fred F. Donnelly (not connected with R. R. Donnelly & Sons Co., Chicago, Ill.) and others doing business as the Florida Directory Co., alleged that the Jacksonville telephone directory is protected by copyright, but that the defendant made a cross-index directory using numbers taken from the regular directory.

The court found this to be an infringement and that the defendant "has persisted in violating" the telephone company's copyrights, and others, including copyrights by the Peninsular Telephone Co. on directories of Tampa and St. Petersburg.

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Wisconsin Bell Case to U. S. Supreme Court

The Wisconsin Telephone Co. rate case will be appealed to the United States Supreme Court at the request of the Wisconsin Public Service Commission. This announcement was made by the office of the attorney general of the state on October 21.

Its 1936 order that the company cut local rates $850,000 a year having been reversed in the Dane County Circuit Court and the Wisconsin Supreme Court, the commission on October 20 decided to take its case to the United States Supreme Court.

At the same time the commission decided not to fight injunctions in the U. S. district court of its 1932 and 1933 temporary orders which would have cut company rates about $3,000,000 for those two years. The commission also will not appeal the Dane County Circuit Court reversal of its 1934 temporary order which would have meant $1,000,000 in rate reductions that year.

Only the final order of March 24, 1936, requiring an annual $850,000 cut in local rates at the company's 96 exchanges will come before the United States Supreme Court, according to the commission.

ANSWERS TO TRAFFIC QUESTIONS ON PAGE 10

1. Please refer to preface.
2. If neither the calling nor the called party will agree to pay for the call on the first use of the toll circuit, the call is subject to a report charge.
3. The operator answers the flashing signal by saying "(Name of her office), are you through?"
4. Yes. The toll center operator times the call.
5. If you receive a report of no circuit from an intermediate office on the first route and you have previously tried the alternate route (or routes) and a circuit is not available on an alternate route, leave a call order, and, if an order is received to hold the circuit, you may hold it for five minutes. If an NC report is received on any subsequent attempt, the same procedure is followed.

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Arguments Concluded in St. Paul Rate Case

Arguments on a motion to void the last telephone rate order of the Minnesota Railroad & Warehouse Commission, under which rates in the St. Paul area were reduced 13 per cent, were concluded October 3 before Judge Gustavus Loevinger in Ramsey County District Court. Attorneys then were given permission to prepare briefs.

The motion is in a suit brought by Joseph Kilroy and Joseph Lenihan, as St. Paul subscribers, attacking validity of the rate order on grounds that it was promulgated without public hearings or other proper proceedings. Issued last May 2, this order replaced a 1936 order, which would have given St. Paul subscribers a 25 per cent rate reduction but which never went into effect.

▼ ▼

Commission Rules Hotels Are Telephone Agents

The New York Public Service Commission September 8 ordered the New York Telephone Co. to include in its tariff schedules a provision to the effect that hotels, apartment houses or clubs in rendering utility service shall become and act solely as agents of the company. The company was authorized to include provision providing for compensation to be paid by it to such agents.

The order was issued after the commission rejected on August 27 the rate revisions filed by the New York company on the ground that they did not comply with the ruling issued July 26. At that time the company was instructed to revise its schedules to include fixed minimum charges and surcharges that hotels, apartment houses and clubs should charge guests for the use of telephone facilities.

The schedules submitted by the company, August 27, failed to fix definite rates but did specify maximum charges and attempted to fix the compensation the agents were to receive. (TELEPHONY, September 9, page 29.)

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Michigan Bell Seeks "Locality Rates" for Resorts

The Michigan Bell Telephone Co. petitioned the Michigan Public Service Commission on October 10, to alter the company's urban line rates in two Lake Erie resort sections just northeast and south of Monroe.

Authority is sought to establish six "locality rate areas" in Frenchtown, Monroe and LaSalle townships. Urban line customers in the resort sections now are billed on an exchange rate basis, plus mileage charges.

▼ ▼

North Carolina Reduces Intrastate Toll Rates

Commissioner Stanley Winborne of the North Carolina Utilities Commission, on October 9, ordered a reduction amounting to approximately $50,000 a year in long distance intrastate telephone rates in North Carolina. The new rate schedule, which becomes effective November 1, will apply to the

Southern Bell Telephone & Telegraph Co., the Carolina Telephone & Telegraph Co., and the North State Telephone Co.

The tolls, Mr. Winborne said, will be almost the same as the interstate rates of the Southern Bell company. The intrastate rates could not be made identical to the interstate charges, he added, because there is a slight difference in the interstate and intrastate mileage blocks or zones.

For station-to-station calls the intrastate rates are lower than interstate for 12 distances; the same for 24 distances, and from five to ten cents higher for 24 distances.

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Summary of Commission Rulings and Hearings

Alabama Public Service Commission

October 12: Southern Bell Telephone & Telegraph Co. requested permission to change to an automatic dial system in Tuscaloosa. City representatives told the commission they would not object to the proposed change.

Arkansas Department of Public Utilities

September 29: Listing expenses approximating $10,000 annually, including outlays for operating and maintenance and additional taxes imposed by city ordinance, the Southwest Telephone Co. amended its petition for an increase in telephone rates at Stuttgart.

Proposed increases in rates range from 10 to 25 per cent. The amended petition recites that under the proposed rate increase in that city a rate of return on its $96,383 investment would approximate 6.3 per cent, compared with 2.1 per cent at present.

Kansas Corporation Commission

October 31: Hearing on application of Central Kansas Telephone Co. for permission to transfer its franchise and to cease operating exchanges in Wheaton, Corning and Circleville.

October 31: Hearing on application of Frank G. Force and Iva Ruth Force, as joint tenants, and not as tenants in common, with right of survivorship for a certificate of convenience and authority to transact the business of a public utility in Nemaha and Pottawatomie counties.

October 31: Hearing on application of Frank G. Force and Iva Ruth Force as individuals for a certificate relating to a proposed issue of their note and mortgage in the amount of $18,200.00.

November 7: Hearing on application of Clearwater Telephone Co. for authority to make certain changes in rates for service in Clearwater.

Massachusetts Department of Public Utilities

October 11: New England Telephone & Telegraph Co. ordered to put into effect November 1, a new plan which will reduce the company's revenues about $175,000 annually. The plan calls for substitution of measured service for toll calls within a 16-mile radius of Boston, resulting in a 40 per cent reduction of rates. Use of automatic dial service also will be extended.

Michigan Public Service Commission

October 10: Michigan Bell Telephone Co. filed application asking authority to alter its urban-line rates in two Lake Erie resort sections near Monroe, by establishing six locality rate areas in Frenchtown, Monroe, and LaSalle townships.

Minnesota Railroad & Warehouse Commission

November 8: Hearing in Storden on applications of the Tri-State Telephone & Telegraph Co. for approval of a change of rates at Jeffers, Westbrook and Storden, and of modification of the base rate areas.

New York Public Service Commission

October 8: New York Telephone Co. given authority to issue and sell privately $75,000,000 of 3⅜ per cent refunding mortgage bonds at 99½ and accrued interest. The commission stipulated that the total cost and expense of issuing the bonds, including the services and the expense of counsel, to be paid by the company shall not exceed $560,000. The entire issue was placed with nine insurance companies.

October 23: Hearing in New York City on petition of New York Telephone Co. for a certificate amending its certificate of incorporation.

October 25: Hearing in New York City on complaint of the town of Eastchester, Westchester county, against New York Telephone Co. as to rates for telephone service.

North Carolina Utilities Commission

October 9: The commission ordered reductions in intrastate long distance telephone rates amounting to approximately $50,000 a year. The new rate schedule becomes effective November 1. It applies to Southern Bell Telephone & Telegraph Co., Carolina Telephone & Telegraph Co., and the North State Telephone Co.

Commissioner Stanley Winborne said the Southern Bell cut of $47,000 was about 10 per cent of its net toll revenue last year. Total cuts over the past two years, Mr. Winborne said, will bring total revenue deductions of about $175,000.

Oklahoma Corporation Commission

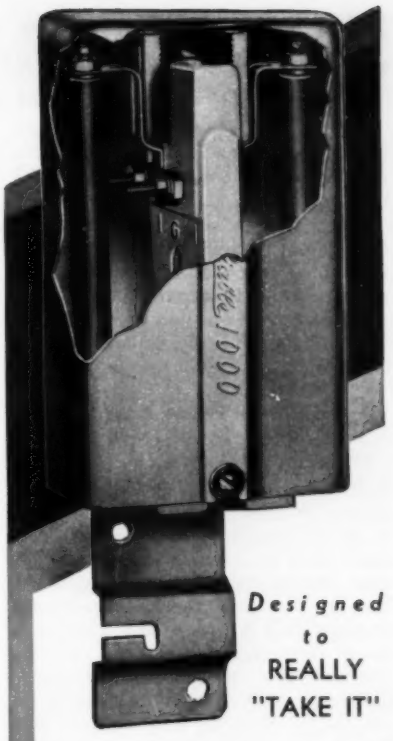
October 26: Hearing on complaint of B. Richardson, telephone engineer, alleging inadequate exchange service by the Terral Telephone Co., at Terral. Extension of time granted from September 26 in which to make the improvements.

November 7: Hearing on application Southwest Telephone Co., for permission to change equipment and increase rates at its Tecumseh exchange.

Wisconsin Public Service Commission

October 17: Farmers Telephone Co., Lancaster, authorized to purchase a lot, construct a building and install a switchboard and outside cable plant at a cost not to exceed $11,000. The new equipment will be automatic.

October 17: Bonduel Telephone Co. given authority to extend its lines to serve two subscribers in Angelica and Green Valley. The Cecil-Green Valley Telephone Co. also serves the area and objected to the extension of service.



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The Economic Side of the World's Existence

(Continued from page 10)

banks' closing and the opening again in July, 1933, we were back to 33 billion.

Then Republicans and Democrats alike, and business men and farmers, and schoolteachers and economists, all proceeded to expand it until we got it back to 54 billion in 1938. That was what we did—we expanded right back to the same old point.

Progress Means Change; Change Is Disturbing

To come from that place back there — when it took half of our people or more to feed us—involved a lot of changes all around. You can't have progress without change, and change is mighty disturbing. You can't have these tremendous changes that we have had in the last 30 or 40 years—or probably even in the last 20 — without disturbances and readjustments. We always hope we can. We are always working for it and want to keep on working for it.

But let me say that if we progress as rapidly as we do, you are bound to have a tremendous amount of change, or you don't have economic progress; you don't have the increase in output for the work you put in, so much so that you can shorten your hours of labor and still have an enormous increase in output. And right there is where your problem of business depression centers.

When you have had one of these long periods of prosperity such as we had from 1898 to 1929, the world is very apt to get cocky; the world is very apt to have enough money and enough goods so that it can easily support a good-sized army, and you are very apt, then, to get war.

In any event, when you have an accumulation of changes such as we have had—the period during which the telephone, electric light and power and automobile came, whereby we laid down a whole new transportation system in this country which cost more money than was put into the railroads, and all these things we did in agriculture—you are bound to have quite a protracted depression.

During such a depression, the old values that were built upon those old industries, and those old methods, are bound to be no longer sound values, and they pass away. People go into bankruptcy, banks fail; some people commit suicide, others just die of heart failure. All of those things happen.

Then along about the middle of those depressions — after we are three or four years into them—we say that the old values are not coming back; we say this is gone, the old order is gone, it isn't coming back this time; we have to take some new steps, and so on. And we are all willing to do that, if we believed there were somebody who knew what steps to take—but he has never been found.

How We Come Out of Protracted Depressions

But somehow we do come out of it. Why? Because the new things that displaced those old ones and destroyed their values are developing. We forget about the new ones that are developing and have our eyes on the old ones; and our hearts are full of mourning over the old ones that are gone.

We have now gotten to the end of this business of liquidating all the results of change. Of course, there are always some mistakes made. There is the temptation to use credits for speculation. No active inventive society in Western civilization has ever been able to restrain itself effectively in the use of credits. Speculation is in the American people. New York speculates on Wall Street.

In the rest of the country, where they haven't much money, they get five dollars and ten dollars together and bet on the horse races. Did you ever count the race tracks in this country, now, as compared with a dozen years ago? It amazes me. And others who do not bet on races — what do they do for speculation? They go to St. Petersburg and buy lots at an auction.

We are always inclined to borrow credit. Well, that's human nature. But let me say this. We have worked through this depression. We got through it, I think, in 1936. Then with labor making all the trouble it did, and the building labor overdoing it on the price of building and so on, we went into the slough of 1937. A year ago we would have come out all right in fine shape, but they had that Munich crisis.

But this last summer, even before the war broke out, business was very definitely advancing, because we had gotten the mistakes worked out; we had worked in so many new efficiencies, so many new industries, that business was bound to go forward. The war has come and it has given us a push, and it will give us more of a push. You needn't worry for the next three or four years, because you are going to have prosperity.

I hope Europe is out of this trouble in three months—certainly in six. But that won't stop us or our prosperity, because something happened in the last six weeks that is going to insure that we are to be busy.

England had a boom over the last three years, you know. Whenever you ask anybody the cause, it's just one word—armaments. Along with that went building. We are going to be in the rearmament business—not really rearmament, but we might call it revision. The last six weeks have taught us that our army, together with most other armies which are built on the traditional lines, are just as obsolete as your grandfather's surrey.

We learned that from what the Germans did in Poland. In three weeks they went in and cleaned up Poland. Why? Because the Germans had taken all these new instruments of transportation—the airplane, the automobile, the truck, particularly, an adaptation of the automobile; and the tank—and had organized them and went into that country.

Poland was not very well equipped to defend itself. It had some airplanes and the neighbors had some airplanes; but the first thing the Germans did was to go in with their airplanes and blow up all the airports. After that, France and England couldn't send in any airplanes because there was no place to land them. Such airplanes as were sent came to grief in Poland, very largely by landing in cow pastures because there were no airports.

Our army officers knew all this about transportation—if they didn't know it, they learned it last summer at the maneuvers — but they could have talked themselves black in the face to Congress before they would have gotten enough money for revision of armament. I dare say now they will get some money to mechanize our army; and it is going to take at least three years to do the job, so we have that as a backlog, along with all the rest.

This isn't the first time that thing happened—I mean on the technological side. There is a story in American history that you have never heard before, for the reason that it isn't in any books. There were a good many foreign officers over here

during our Civil War as observers. And they were usually observing in Lee's army because they considered him a much better strategist than anyone either side had.

The Civil War has one claim to distinction — not only among our wars but in the wars of all history. It was the first war fought after the railroads came. After that, war was never anything like what it had been before.

Wellington had 35,000 soldiers in the Spanish Peninsula. There weren't 100,000 soldiers on the allied side in Waterloo. They couldn't feed them, transport them. And in our "War between the States"—if you choose to call it that — some Frenchmen and a lot of Germans were over here observing the new techniques and the new instruments of transportation and communication in war.

If you read a book by Hazen, "Europe Since 1815," you read about a six weeks' war. It was in 1866, when Germany attacked Austria. You will read that Von Moltke, who was the chief of staff in Germany (and also in the Franco-Prussian War) was a master in the use of transportation and communication in war. He had learned it from Lee and went back and tried it in Austria.

After trying out these new techniques in Austria and perfecting them, Germany went for France—and the Franco-Prussian War didn't last six months.

This is exactly a parallel, don't you see, where the new instruments of transportation—the automobile with its offspring, the truck, and the tank and the airplane—together with the new communication (not only the telephone but the radio) were organized by the Germans and put to use.

That's why we are going to be busy, with the army, for one thing—making armaments. So for the next two or three years we are going to have prosperous times.

The interest rates will gradually rise—not very fast at first. The government bonds are stabilized here already. But if you haven't your refinancing done, you had better do it.

Prices, I think, will not go up very much — certainly not if the war doesn't last more than six months or a year, because we are so efficient in production that I think our increase in production will pretty much eat up the advance in prices. They will advance some, because the price level now is abnormally low, around 76 or 77, and I should think that might go up to 90.

On the whole, we will get a lot of our people off the relief roll and onto the payroll. I do not know how many billion dollars that's worth, but it's a lot of them, because that was a task every man contemplating the presidency shrank from undertaking. It's not easily done—to take a bunch of people off the relief roll onto the payroll. We'll do that.

We will see interest rates rise somewhat. We will see employment. We will see tax receipts rising greatly, because we will have increased income from which to pay them.

What will happen after that depends on how long the European war lasts, and whether we will get into it. That's something we will have to discuss a year after. But I congratulate you upon being able to offer you prosperity on a silver platter, with a guarantee.

▼ ▼

New Wage-Hour Head Declares "Fair Dealing" Policy

Fair dealing with industry and labor is the declared policy of Col. Philip Fleming, army engineer, who took over administration of the Wage-Hour Law October 23 on the eve of a statutory change in the law's standards.

"My past relations with labor and industry have been pleasant," he said. "I think I have a reputation for fair dealing and that is what I intend to continue."

Beginning October 24 the minimum wage rate under the law became 30 cents instead of 25 cents an hour, and the maximum work week, unless time and a half overtime is paid, becomes 42 instead of 44 hours.

Officials estimated that the changes would mean pay increases for 690,000 workers and a shortening of the work week for 2,380,000.

While Colonel Fleming will be active head of the Wage-Hour Administration, he cannot hold the title because federal statutes prohibit army officers on active duty from taking an elective or appointive position in the government. Unless Congress makes special provision, he cannot claim the title of Wage-Hour Administrator, the latter being held by Harold D. Jacobs, who was deputy administrator under Elmer F. Andrews.

▼ ▼

Recent Prices in the Metal Markets

New York, N. Y., October 24.—Copper steady; electrolytic spot, 12.50; tin steady; spot and nearby, 56.00n; forward, 50.00n. Lead steady; spot New York, 5.50@5.55; East St. Louis, 5.35. Zinc steady; East St. Louis, spot and forward, 6.50.

HIGHWAY

"YOU GET EVERYTHING" IN THESE MODERN HIGHWAY BODIES

and at surprisingly LOW PRICES!

The body shown at the top was developed to give utilities and telephone companies a general service body to take care of all odd jobs. It is really a "handy man"—lightweight, durable, and efficiently designed to utilize every unit of space for the whole assortment of tools and materials used in service work. Accessibility is a feature.

Investigate the possibilities this new body offers you—see how modern design has given you an all purpose body that will save money for you.

The other is the Highway Type SL Body and is known as a sectionman's or combinationman's service body. It is admirably adapted to all of the various types of service in and around small exchanges.

All bodies are designed by telephone engineers. Every detail is the result of years of study of telephone company requirements.

We invite your inquiry for further details and prices.

HIGHWAY TRAILER CO.
EDGERTON WISCONSIN

The Manufacturers' Department

Burgess Convention Exhibit Attracted Many Visitors

Many telephone men who attended the recent convention of the United States Independent Telephone Association in Chicago visited the exhibit room of the Burgess Battery Co., of Freeport, Ill. The attractive display of Burgess telephone batteries and auxiliary equipment proved of interest to many conventioneers.

Prominently displayed were the Burgess Twin-Six telephone batteries which are claimed to be lighter, more compact, easier to handle and to use than round cells. Also on display were Tri-Six switchboard batteries, flashlights, safety flares and samples of the many sizes of batteries manufactured by the Burgess company. And the Burgess telephone acousti-booth received a great deal of attention and favorable comment.

A section of the attractive display of the Burgess Battery Co., at the recent national convention in Chicago.

New Visual Telephone Signal Device Developed

The Padua Holdup Alarm Corp., Cohoes, N. Y., has developed a new device which, when assembled with present telephone equipment, produces a distinct departure from the usual method of receiving telephone call signals. The new device picks up incoming signaling currents and converts them into a visual signal through the medium of an intermittent flashing light. If the light signal is not answered during a reasonable waiting period, the regular bell signal is automatically energized in the capacity of a audible supervisory signal.

The initial visual signal is said to be well adapted to every type telephone subscriber but should prove of value in hospitals, hotels and large offices where employes have experienced detraction from their work due to ringing telephone bells.

Using the electric light current for its source of energy, the system is so arranged that its addition to an existing audible system can be accomplished without disturbance to that system or causing excessive installation expense, it is claimed. It consists of a neat control box with a cord extending to the nearest convenient electric outlet; another cord connects to a desk lamp, reading lamp or bed lamp. A third cord from the box connects with the telephone bell box.

The flashing lamp is a standard lamp of any desired size and may be mounted in any fixture. After complete installation the lamp flashes intermittently whenever a call comes in. When the telephone receiver is lifted, the signal is automatically reset for the next call.

A non-exclusive license to manufacture and sell this device has been granted by the Padua corporation to a large telephone manufacturing company in this country.

Telephone men from a dozen companies visited the Western Electric Hawthorne Works during the recent Independent telephone convention in Chicago. In this group are: F. E. Behm, Jas. N. Cox, Jr., R. B. Fairly, W. F. Girtman, Andrew J. Gordoni, I. S. Kerstetter, R. W. Kintzer, F. W. Kuhn, Burl H. Martin, J. F. McClurg, Jr., G. R. McKelvey, J. A. McKinzie, R. F. Mixelvy, Fred E. Norris, W. W. Ponsford, C. S. Powell, Wm. W. Shoop, R. W. Shimer, F. M. Strasser, J. A. Taylor, Thomas A. Tunney, H. W. Vaughan and L. P. Young.

Eastman Kodak to Have PABX Service in Rochester

The Rochester (N. Y.) Telephone Corp. has recently contracted with the Eastman Kodak Co., world-famous makers of photographic apparatus and supplies, for private automatic branch exchange service for the Kodak Park plant and the State Street offices of the company. Automatic switching equipment to serve these two points will be supplied by Automatic Electric Company, Chicago.

The Kodak Park plant—the main production division of the largest manufacturing concern in Rochester—will require 1,200 lines. The remaining 600 will serve the company's general offices on State Street.

The two locations will be interconnected with tie trunks, and also be connected by direct trunk lines to a smaller Eastman plant—the Hawkeye Works. Central telephone exchange connections will be made directly from both the State Street and Kodak Park divisions.

BOOK REVIEW

WHO INVENTED THE TELEPHONE? by William Aitken, M.I.E.E.; published by Blackie & Son, Ltd., 50 Old Bailey, London, England; 196 pages, 5 ins. by 7⅜ ins.; price five shillings ($1.25) net.

The author, formerly chief of the technical staff of the National Telephone Co., in this book presents an interesting account of the birth-pangs of the telephone. The question of who deserves chief credit for its invention has always been a debatable one centering chiefly upon the fact that the patent applications of Elisha Gray and Bell were filed on the same day. The patent to Bell gave rise to several legal battles which were prominent in the courts of the United States about 50 years ago.

Mr. Aitken has reviewed the subject from an unprejudiced and independent point of view and has gathered together much information of early telephone devices and the widely-varied claims of their inventors. The book is composed largely of extracts from the early technical telephone literature of the world. As these are mainly patent specifications, decisions of judges and expert witnesses, the actual words have been quoted so that no shade of meaning is lost.

The summarization of the author's close study of contemporary documents and accounts, although not flattering or creditable to the early exploiters, or to the authorities who passed on the early claims, is interesting and the book makes a thought-provoking addition to the history literature of the telephone.

Modern Masterbuilt Service in Hawkinsville, Ga.

BY A. B. POGUE,

Representative, Kellogg Switchboard & Supply Co.

The new telephone system of the Hawkinsville (Ga.) Telephone Co. is one of the finest available—it provides Hawkinsville with modern, fast telephone service equivalent to that of some of our larger cities.

The new central office equipment consists of a two-position 6-800 Masterbuilt switchboard, relay rack, cable rack, and power equipment — all of which was purchased from the Kellogg Switchboard & Supply Co. of Chicago. The switchboard provides in an efficient way, the five fundamentals of good telephone service: A quick answer from the operator; a fast connection; a satisfactory uninterrupted conversation; a prompt recall so another call can be made, and a rapid disconnect.

Gathered around the new Kellogg 6-800 Masterbuilt switchboard installed at Hawkinsville, Ga., are, left to right: W. M. JENNINGS, MRS. W. A. JENNINGS, J. C. JENNINGS, and operators, MISS RENA SUBER AND MRS. RUTH MEADOWS.

By means of automatic ringing the calling subscriber has in effect, complete control of ringing the telephone with which he wishes to be connected. The audible ringing tone is a feature indicating that the party called is being rung. When the automatic ringing is started by the operator, it continues intermittently until the called subscriber answers or the calling subscriber hangs up.

The subscriber's telephone signal and jack are multipled twice on this new Kellogg switchboard, each in front of a different operator. This call distribution makes sure that no subscriber is kept waiting because if one operator is busy establishing another call, the other one can make the connection.

The switchboard has an ultimate capacity of 800 lines multipled on a four-panel basis. At present there are 260 local lines equipped, 10 toll lines and ten rural lines. Provision is made for an increased number of subscribers, because easy, economical changes in positional equipment can be made in the event of local, rural or toll growth.

The Hawkinsville exchange has been in operation under the management of the Jennings family since 1914. Twenty-four years ago, W. A. Jennings, now deceased, assumed control. Today, the business is managed by his widow, Mrs. W. A. Jennings, and two sons, Mansfield and J. C. Jennings.

A Quick, Easy Way to Determine Heights

Use a

SEELYE

HITEMETER

Now — quickly determine heights of poles, trees, road clearances, etc., with a Seelye Hitemeter. . . . Just pace off 75 feet from the base of the object to be measured . . . then place base of Hitemeter against bridge of nose, holding Hitemeter with thumb and first two fingers. Site along base of instrument to base of object — hold position — then site top of object and mark point on vertical scale. . . . Scale shows object's height. You or anyone else can quickly "shoot" heights of poles, trees, road clearances, etc.— efficiently with a Seelye Hitemeter. One trial proves it.

Ask About A Trial Order

JAMES R. KEARNEY CORPORATION ST. LOUIS, MO.

DISTRIBUTED THROUGH JOBBERS

TELEPHONE ACCESSORIES

EASY TO USE

Without complicated computation or figuring you can determine all sorts of heights you need to know. . . . It's merely a matter of siting along two planes (base and hypotenuse of a triangle) — then setting height slide on vertical scale to determine height. . . . Easy, fast and efficient.

Drop Wire Construction Methods (Cont.)

Another type of "drive-in" attachment for brick and masonry buildings is shown in Fig. 13. Installation involves drilling a hole, placing the expansion device and driving in the nail. The expanded aluminum alloy grasps the sides of the hole firmly and will support a substantial load. It is highly important that

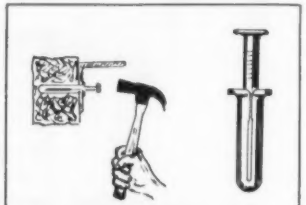

FIG. 13 - HAMMER DRIVE-IN ANCHOR DEVICE FOR ATTACHING DROP BRACKETS TO MASONRY.

manufacturers' recommendations as to hole sizes be carefully followed, for the holding power will be reduced if the hole is too large.

These drive anchors are available in lengths of ⅞ inch to 3½ inches and diameters of ⅜ inch to ½ inch. The accompanying table gives the most useful sizes and drills to be used.

Anchor Size	Drill Size	Anchor Size	Drill Size
⅜ in. by ⅞ in.	⅜ in.	¼ in. by 1½ ins.	¼ in.
⅜ in. by 1¼ ins.	⅜ in.	⅜ in. by 1¼ ins.	⅜ in.
¼ in. by 1 in.	¼ in.	⅜ in. by 1¾ ins.	⅜ in.
¼ in. by 1¼ ins.	¼ in.		

The most useful sizes of expansion anchors and size of drills to be used to install them.

Use of Bridle Rings

Bridle rings are used chiefly on buildings where horizontal or vertical runs, which carry several drops, are run along the side of a building. These rings are available in either the screw, toggle or nail type. The

"Telephony's" Engineering Data
By B. C. Burden

Index Drop Wire Construction.
October 28, 1939.
No. 2-B, Page 11.

screw and nail types are used chiefly for wood surfaces while the toggle is used on hollow tile.

Insulated screw eyes serve the same purpose as bridle rings; however, they are used for only one or two drops. Theoretically an insulated ring or eye is required for all lines which carry an "exposed classification." Many companies, however, disregard the requirement for insulated supports, even for exposed drops.

Attachments at the Pole Ends of Drops

Support for the pole end of a subscriber's drop is best provided by means of a pole hook and drop-wire clamp. This arrangement is easy to install and presents a neat appearance. It is preferable to the old practice of using knobs and ties.

The "drive-rings" help to hold the wire on the face of the pole in an orderly manner. By feeding the drop through all three drive rings located below the cable terminal an arrangement is provided whereby all drop wires entering the cable terminal are kept uniformly tight. If it becomes necessary to shift a drop to another terminal pair, slack can be made available, if required, by taking the drop out of the bottom ring.

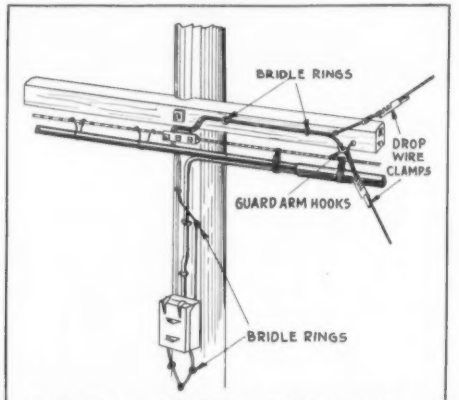

FIG. 14. TYPICAL GUARD ARM INSTALLATION.

"Telephony's" Engineering Data
By B. C. Burden

Index Drop Wire Construction.
October 28, 1939.
No. 2-B, Page 12.

This method is used and recommended by the larger companies.

The drop wire hook should be placed above rather than below the cable messenger. The hooks should always be placed on the sides of the pole rather than on its face or back. Where guard arms are required on joint-use poles the drops should be supported from the arms by means of clamps and special bolt hooks fastened near the ends of the guard arms. Bridle rings should be placed in the side of the guard arm to carry the drop from the pole out along the arm to the support hooks. A typical guard arm installation is shown in Fig. 14.

Where trees or small buildings are in the path of a drop run between the terminal pole and the building to be served, it is usually necessary to extend the drop to an adjacent pole and from there to the building. If the best point at which the drop can break off from

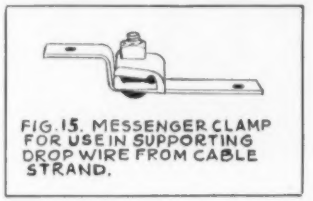

FIG. 15. MESSENGER CLAMP FOR USE IN SUPPORTING DROP WIRE FROM CABLE STRAND.

the lead is intermediate between two poles, then a special messenger clamp can be used to advantage. Fig. 15 illustrates the use of the messenger clamp.

Drop wires entering cable do not ordinarily require open-space cut-out protection against lightning unless the individual drops are one-half mile or more in length. Protection when required at unprotected cable terminals can consist of either a single house-type protector, or a pole-type five-line open-space cut-out unit, depending on the number of lines to be protected.

The protector should be mounted near the top of the pole above the cable terminal. The protector ground strip should be connected to the cable-supporting strand, and need not be connected to a ground electrode.

Here and There in the Field

O'Connell Honored at Dinner by General Telephone Group

One of the many special events held at the Stevens Hotel, Chicago, in connection with the recent national Independent convention was a dinner in honor of J. F. O'Connell, president of Commonwealth Telephone Co. of Madison, Wis., and manager of the entire central group of General Telephone properties.

There were 42 present, representing all the operating companies, the three staff headquarters and the New York office of the General Telephone System. The election of Mr. O'Connell to the presidency of the United States Independent Telephone Association was the occasion of the dinner.

▼ ▼

Independent Buys Bell Exchange in Rippey, Iowa

Announcement has been made by the Northwestern Bell Telephone Co. that the Bell lines and equipment at Rippey, Iowa, have been purchased by the Farmers Rippey-Angus Telephone Co. The complete change-over was made September 27.

All former customers of the Bell company became customers of the Farmers company and the action will permanently unify the two systems into one, permitting all subscribers in Rippey to call any other subscriber in that community. Long distance facilities of the Bell System will be available to the Rippey patrons.

▼ ▼

Ohio Independents Discuss Current Legislative Problems

Steady improvement of properties, including the extension of services to the public was the encouraging picture drawn of individual operating companies by J. T. Carliss, Marion, president of the Ohio Independent Telephone Association, in his semi-annual address, delivered at the district meeting of the association held at Warren on October 20.

This meeting, the first of three district meetings, was attended by about 125 telephone men representing various Independent companies in the eastern and northeastern section of the state. It was held at the Warner Hotel with Ralph Mateer, secretary and general manager of the Warren Telephone Co. and other officials of the company playing the part of hosts.

The subjects which probably drew the most attention in the various discussions were the Wage-Hour Law, the proposed Bigelow amendments to the state constitution to be voted upon at the November election, and problems confronting various companies in the association.

In commenting upon the Wage-Hour Law, President Carliss stated that the amendment enacted by Congress specifying exemptions for exchanges serving less than 500 stations, extends relief to many companies but fails to help others, which are left in the dark without definite knowledge as to whether they are exempt from the law as "intrastate agencies" or "service establishments," or are to be subject to "bureaucratic interpretations."

As the law now stands, he pointed out, it specifically exempts 476 exchanges in Ohio serving less than 500 subscribers. He stated that there are 75 additional exchanges serving 500 to 2,500 subscribers which are still in doubt as to their true status.

President Carliss urged opposition to the proposed Bigelow amendments to the state constitution. One of these if enacted would provide a pension for single persons of the age of 60 years or more of $50 a month. The other would greatly reduce the number of signatures required to petitions to submit various questions of taxation and other subjects to a referendum vote of the electorate.

▼ ▼

Texas Town Requests Common Battery System

A formal request to the Southwestern States Telephone Co. to install an improved telephone system in Mt. Vernon, Tex., was made by the city council and directors of the chamber of commerce at a meeting on September 27. The request was made to T. E. Preston of Winnsboro, district agent of the company.

Mr. Preston said he could not indicate whether the company would be willing to make a change to common battery operation. If such a change were made, rates would have to be raised in order to pay for it.

HEMINGRAY Glass INSULATORS

For a long life of dependable low-cost service rely on Hemingray Pin-Type Glass insulators.

No aging or deterioration . . . unaffected by sudden temperature changes . . . interval strains and stresses removed . . . homogeneous in character, only one coefficient of expansion . . . sustained high dielectric strength . . . clear, flawless for easy inspection . . . all surfaces impervious to moisture . . . tougher, improved glass to withstand rough handling. Write us about your requirements. We'll gladly send samples.

Owens-Illinois Glass Company, Muncie, Indiana.

Export Agents: International Standard Electric Corp., New York

Financial Data

Recent Prices of Telephone Bonds

(These quotations, as of October 23, are furnished by W. C. Pitfield & Co. Inc., Commerce Building, Kansas City, Mo.)

	Bid	Asked
American Utilities Service Corp., 6s, 1964	83	86
Ashland Home Telephone Co., 4½s, 1961	101	..
Associated Public Utilities Corp., 5s, 1947	70	75
Associated Telephone Co., Ltd., 4s, 1965	104	106
Associated Telephone & Telegraph Co., 5½s, 1955	70	74
California Water & Telephone Co., 5s, 1965	Called 9/1/39 at	105
California Water & Telephone Co., 4s, 1969	99	101
Central Electric & Telephone Co., 5s, 1955	101½	103½
Central Iowa Telephone Co., 5½s, 1947	100	102
Central Telephone Co. of Delaware, 6s, 1938	10	15
Citizens Independent Telephone Co., 4½s, 1961	102½	104½
Commonwealth Telephone Co. of Pennsylvania, 5½s, 1945	90	93
Commonwealth Telephone Co. of Wisconsin, 4s, 1966	103	105
Community Telephone Co., income 5s, 1949	6	8
Continental Telephone Co., 5s, 1953	Called 2/1/40 at	101
Florida Telephone Corp., 6s, 1945	100	102
Florida Telephone Corp., 6s, 1954, second mortgage	83	87
Gary & Company, Theodore, 6% income notes, $5 par	3½	4½
Home Telephone & Telegraph Co. of Fort Wayne, Ind., 5½s, 1955	105	..
Home Telephone & Telegraph Co. of Fort Wayne, Ind., 6s, 1943	104	..
Illinois Communities Telephone Co., 6s, 1949	60	64
Illinois Commercial Telephone Co., 5s, 1960	100	103
Illinois Commercial Telephone Co., 5s, 1948	101	103
Indiana Associated Telephone Co., 4½s, 1965	103	105
Indiana Central Telephone Co., 5½s, 1938	85	90
Inland Telephone Co., 6s, 1948	80	84
Interstate Telephone Co. of Idaho, 5s, 1961	102	104
Interstate Telephone & Telegraph Co., 5½s, 1953	98	100
Investors Telephone Co., 3s, 1961	60	63
Iowa Illinois Telephone Co., 3s, 5½s, 1949	flat 30	33
Jamestown Telephone Corp., 5s, 1954	104	..
Keystone Telephone Co. of Philadelphia, 6s, 1951	99	101
Keystone Telephone Co. of Philadelphia, 5½s, 1955	97	100
La Crosse Telephone Co., 5½s, 1948	100	103
Lexington Telephone Co., 6s, 1944	Called 9/1/39 at	101
Michigan Associated Telephone Co., 4s, 1968	103	105
Middlewestern Telephone Co., 6s, 1943	90	93
Missouri Telephone Co., 4¼s, 1961	102	104
Ohio Associated Telephone Co., 4½s, 1966	103½	105
Ohio Central Telephone Co., 6s, 1947	100	102
Pennsylvania Telephone Corp., 4s, 1965	104½	...
Pike County Telephone Co. of Indiana, 6s, 1946	flat 50	...
San Angelo Telephone Co., 5s, 1958	102	...
Santa Barbara Telephone Co., 3½s, 1966	102	104
Southwestern Associated Telephone Co., 5s, 1961	102	104
Southwestern States Telephone Co., 6s, 1948	68	70
Southwestern States Telephone Co., 6s, 1949	65	67
Standard Public Service Co., 6s, 1948	62	65
Telephone Bond & Share Company, 5s, 1958	74	77
Telephone Service Co. of Ohio, 5s, 1953	87	89
Tri-County Telephone Co., 4½s, 1956	102	..
United Telephone Co. of Delaware, 6s, 1948	90	92
United Telephone & Telegraph Co., 5½s, 1953	98	100
United Telephone & Telegraph Co., 6s, 1953	99	101
Wabash Telephone Co., 4½s, 1956	104	...
West Coast Telephone Co., 5s, 1953	100	103
Western Light & Telephone Co., 5s, 1954	104	105

Mountain States Bell Reports Increased Revenues

The report of the Mountain States Telephone & Telegraph Co., Denver, Colo., for the three months ended on September 30, shows a net income after expenses and charges of $1,053,-062. This was equal to $2.19 a share on the company's outstanding capital stock and compares with a net of $962,051, or $2 a capital share, in the three months to September 30, 1938.

For the 12 months to September 30, net income amounted to $3,987,720, equivalent to $8.30 a capital share, against a net of $3,163,456, or $6.58 a share, in the preceding 12 months.

In the first nine months of the current year the company had a net increase of 16,000 telephones in operation, compared with a gain of 12,675 in the first nine months of 1938. The gain for the third quarter of this year was 8,228 instruments, compared with 8,300 in the September quarter of 1938.

I. T. & T. Reports Income Decrease for First Half

International Telephone & Telegraph Corp. and subsidiaries, exclusive of German and Polish holdings, had a consolidated net income of $3,235,527, or 50 cents per capital share, in the first six months of this year. This compares with $4,423,593, or 68 cents per share, in the corresponding 1938 period. Cable revenues were reported "increased substantially" since start of the European war.

Net loss of the German and Polish subsidiaries, chiefly due to translation of net current assets into U. S. dollars, amounted to $521,152 and $43,836 for the 1939 and 1938 periods, respectively.

President Sosthenes Behn informed stockholders: "It is impossible to estimate or to predict at this time the ultimate effect of the conditions created by the war in Europe on the corporation's cash and earnings, due to the uncertainty of the ultimate scope and economic effect of the war operations, the extent to which restrictions may be imposed with respect to transfer of funds and the extent to which the activities of the manufacturing subsidiaries in the affected countries may be curtailed with respect to exports of materials and equipment to outside customers and to operating subsidiaries."

Third Quarter Income of New England T. & T. Increases

The report of the New England Telephone & Telegraph Co., Boston, Mass., for the nine months ended on September 30, shows a net income of $7,275,-422, after all expenses and charges. This was equal to $5.46 a share on the company's 1,333,458 shares of capital stock outstanding, and compares with a net of $5,914,192, or $4.44 a capital share, in the nine months to September 30, 1938.

In the third quarter of this year, the company had an indicated net income of $2,542,671, equivalent to $1.91 a capital share, compared with a net of $1,618,727, or $1.22 a share, in the September quarter of last year.

During the first nine months of the current year, the company had a cumulative net gain of 35,476 telephones in operation, compared with an increase of 16,686 instruments in service in the corresponding period of 1938.

September Station Gains of Bell Companies

Principal subsidiaries of the American Telephone & Telegraph Co. reported a net cumulative increase of 93,800 telephones in service in September. This compares with gains of 83,500 in September, 1938, and of 99,-400 in September, 1937. For the first nine months of 1939 the system had a gain of 527,900 stations. Its total number of telephones in service September 30 was 16,289,170.

The New York Telephone Co. gained 4,860 telephones in September as compared with 109 in August. For the year to that date the company had an increase of 54,591 telephones.

The Illinois Bell Telephone Co. reported stations in service in Chicago on September 30 totaled 979,157, a gain of 3,016 during the month. Telephones in service in Illinois, outside of Chicago, totaled 465,606, an increase of 2,868 since August 31.

IN THE NATION'S CAPITAL

(Concluded from page 17)

your correspondent ventures the forecast that unless such a shake-up and overhauling come to pass, the Wage-Hour Administration will be just as disappointing in the near future as it has been in its brief past.

THINGS have been fairly quiet for the last two weeks along the FCC front. About the only development of consequence was the news that Chairman Fly has taken up in earnest the task of promoting a merger between the two national telegraph companies. This is already supposed to be under consideration of a special Senate committee approved at the last session. But the special committee has no money and the FCC will have to do most of the spade work, if anything is to come of this latest effort to solve the troublesome problem of duplicate national telegraph facilities.

However, Chairman Fly is one of those quiet persistent administrative bulldogs who may well succeed where others would not even bother to try. A couple of weeks ago he took Chief Accountant Norfleet and slipped up to New York to talk over the situation with some of the telegraph officials. He aided in bringing into the FCC staff a rather able but somewhat radical young Justice Department attorney, Robert M. Cooper, who has been engaged up to now in federal government litigation involving the telegraph companies.

What will come of all this will probably be a recommendation for enabling legislation by Congress that will permit a merger of the two wire carriers. That is the first necessary step. Then will come the real difficulty, chief of which will be labor's opposition to operating economies that might result from any proposed combination which would eliminate duplicate personnel.

It is a hard row to hoe, but if Chairman Fly has already set his mind to it, as the unofficial reports insist, he may get somewhere. If he does, it would be an administrative triumph of the first magnitude.

P.S. Last week the Vanguard Press released a new volume on the special telephone investigation, written by a former staff economist, N. R. Danielian. It is entitled simply "A. T. & T." For those anxious to have a complete library of available literature on the subject, the book might be worthwhile. On its own merits it struck this writer as unexciting and even rather second rate for the simple reason that it contains nothing new and is annoyingly colored by the author's obvious anti-utility bias.

The volume follows the approximate line of Commissioner Walker's Proposed Report, with occasional excerpts from the investigation staff data. Nowhere is there much recognition of the comparative international excellence of American telephone service or technical initiative. It hardly stacks up with literary products of other former members of the FCC staff, notably Joseph Borkin, whose sprightly volume on "Television" was really a dramatic contribution to the field of communications literature.

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MATHEMATICS FOR TELEPHONE ENGINEERS

(Concluded from page 13)

$$B_n = 1/\pi \left\{ \int_0^{\pi} C.\cos nx.dx + \int_0^{2\pi} \cos nx.dx \right\}$$

$$= 1/\pi \left\{ C/n \left[\sin nx\right]_0^{\pi} + 0 \right\} = 0$$

Therefore, all cosine terms are zero.

$$A_n = 1/\pi \left\{ \int_0^{\pi} C \sin nx.dx + \int_0^{2\pi} 0.\sin nx.dx \right\}$$

$$= (C/n\pi) \left[-\cos nx\right]_0^{\pi} = (C/n\pi) (-\cos n\pi + 1)$$

When n is odd, $1 - \cos n\pi = 2$ since $-\cos n\pi$ is always -1 and $1 - (-1) = 2$.

When n is even $1 - \cos n\pi = 0$ since $\cos n\pi$ is always $+1$.

Therefore,

$B_1 = 2C/\pi$, $B_2 = 0$, $B_3 = 2C/3\pi$, $B_4 = 0$, $B_5 = 2C/5\pi$, $B_6 = 0$.

Therefore,

$y = (\frac{1}{2})\ C + (2C/\pi)\ (\sin x + 1/3 \sin 3x + 1/5 \sin 5x \ldots$ etc.).

The curve of Fig. 246 (b) has the same equation except that there is no average term and $(\frac{1}{2})\ C$ is, therefore, omitted.

COMING CONVENTIONS

Virginia Independent Telephone Association, Stonewall Jackson Tavern, Staunton, October 30 and 31.

North Carolina Independent Telephone Association, Sedgefield Inn, Greensboro, November 2 and 3.

South Carolina Independent Telephone Association, Jefferson Hotel, Columbia, November 6 and 7.

Florida Telephone Association, Suwannee Hotel, St. Petersburg, November 13 and 14.

Alabama Independent Telephone Association, Jefferson Davis Hotel, Montgomery, November 17 and 18.